A window open on the world

The UNESCO Courier

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THE POPULATION CRUNCH

agenda for the future

TREASURES
OF
WORLD ART

13

Spirit figure mask (Gabon)

An African funerary mask from the Ogowe River area of Gabon. With its refined features, curved half-closed eyelids and an elaborately carved black coiffure standing out boldly above the white painted face, the mask strikingly recalls certain Asian works of art. But the talented artists who produced masks of this kind lived in the very heart of Africa and had no possibility of contacts with the Far East. For kinsfolk, the spirit figure masks represent the restitution of a dead person to their midst.

Photo © Musée Rietberg, Zurich - Bernhard Moosbrugger. From "African Sculpture" by Elsy Leuzinger, Atlantis Verlag, Zurich, Switzerland

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All correspondence should be addressed to the Editor-in-Chief in Paris

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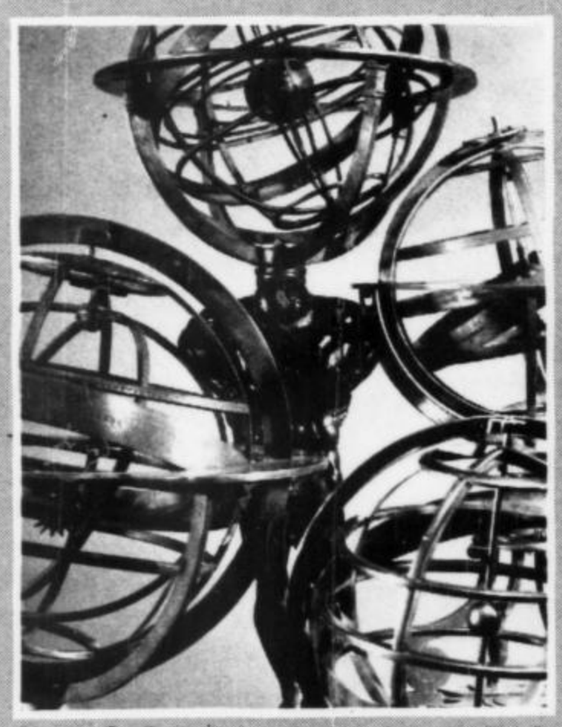

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Cover photo

With all the technological changes that have taken place since these armillary spheres were first invented by Archimedes, man today must bear the weight of many worlds. Yet the demographers contend that the great problem confronting us is not how man can shoulder many worlds, but rather how our one world can support as many men as there are likely to be in the years ahead.

Three centuries of demography

JOHN GRAUNT'S OFFSPRING

by Boris Urlanis

Anniversaries of prominent scientists are usually fairly easy to establish, but the birthday of a branch of science is often hidden in the depths of time. Demography is a fortunate exception, for its birthday has been established beyond all reasonable doubt—January 1662, when John Graunt, a London businessman, published his *Natural and Political Observations Made Upon the Bills of Mortality*. This book was the world's first piece of research in the field now known as demography.

Five years ago demographers celebrated the tercentenary of their trade; be it said to the honour of Soviet scholars that they set the ball rolling by reading a paper on the subject at the 33rd Session of the International Statistical Institute in Paris in the summer of 1961.

The writer Stefan Zweig once used the term "the astral hours of man" to describe moments of great human spiritual uplift, when the genius in man is being awaked. Out of millions of human beings only one genius is born, he wrote, only one provides mankind with a truly historic astral hour.

Such an astral hour struck when John Graunt the successful businessman in London, sitting before a warm fire scanning the weekly Bills of Mortality in London, conceived the brilliant idea of subjecting these Bills, with their mass of figures, to a scientific analysis. His book was the outcome of this fireside contemplation. In this way the bright ideas of John Graunt led to the birth of demography in London.

Graunt had many followers, prominent among them William Petty, a close friend, who took demography a step forward by a number of interesting calculations and the conclusions drawn from them. He calculated, for instance, that 3,000 people had died in the biggest Paris hospital solely because the hospital was badly organized. It is true that some of his assumptions later proved to be unfounded; for example, he computed that the population of London would continue growing only until 1800, whereas it actually increased eightfold between 1800 and 1950.

Following in the footsteps of Graunt and Petty, the English astronomer Edmund Halley made a big contribution to the new science. He used data from the city of Breslau (now Wroclaw) to compile the first mortality table which was published in 1693 by the Royal Society (the oldest scientific society in Great Britain, founded in 1660).

In the 18th century demography made its way to the European continent, where many of the best minds had begun to take an interest in population problems. The German pastor J.P. Süssmilch made a further important contribution in 1742 with his book *Die göttliche Ordnung in den Veränderungen des menschlichen Geschlechts*. (The Divine Ordinance manifested in the Human Race through Birth, Death and Propagation.) A wealth of demographic data was gathered for this book from which some significant conclusions were drawn.

It was about this time that demography was first taken up in Russia. Mikhail Lomonosov, a Russian scholar of exceptional versatility—physicist, chemist, poet, geographer, economist, statistician... and demographer—was the first Russian scientist to raise the question of demography. He did so on the grand scale, outlining his ideas on the subject in a letter written on November 1, 1761 to his friend Count Shuvalov, a favourite of the Empress Elizabeth.

The letter was a remarkable treatise on population policy. Lomonosov referred to "the preservation and increase of the people". He spoke of the various factors hindering the growth of the population and suggested ways and means of overcoming them. He called attention to the differences in the ages of husbands and wives, to the very high level of infant mortality, to the effect of alcoholism on the death rate, etc. He also spoke of emigration and called Russians who left their native land "living corpses".

Shortly after this, Count Shuvalov lost favour at court and so Lomonosov's letter (which was addressed to the Count) had no immediate results. But it is important to know that in Russia the question of a rational demographic policy was raised just over 200 years ago.

At the end of the 18th century, a slim work written by an anonymous author and entitled "An Essay on the Principle of Population" was published in England. It put forward the view that the poverty of the mass of the population was due simply to the sexual instinct of reproduction and was not a consequence of the economic and political systems of that time. The author of this work was an English clergyman, Thomas Robert Malthus.

CONT'D ON PAGE 6

BORIS URLANIS *is one of the Soviet Union's leading demographers and statisticians. Professor of demography at the Institute of Economics, U.S.S.R. Academy of Sciences, he has written many books and studies, and in particular on the theory of statistics and on war and the population of Europe.*

Photo © Paul Almasy, Paris

'A maximum increase in population is not a blessing among all peoples'

In the 19th century the development of demography continued, although it was not baptised until 1855 when the French scholar Achille Guillard used the word *démographie* in the title of his book *Eléments de statistique humaine ou démographie comparée*. As a scientific term, therefore, "demography" is little more than 100 years old.

In the 20th century demography began to attract greater attention: institutes of demography were founded, special journals appeared, congresses were convened and demography was added to many university syllabuses.

In the U.S.S.R. and other socialist countries demography has been very widely developed as a prerequisite of economic and social planning and the general improvement of living standards. Take housing for instance. About ten million Soviet people move into new apartments every year, and architects want demographers to tell them what the future size of families will be so as to build apartments of the appropriate size. Those who plan sports grounds and stadiums, hospitals, theatres and other public buildings want demographers to estimate the composition of the community by age groups.

PLANNING bodies in general have to know what sex and age groups will make up the population at any future date. To plan nurseries, kindergartens, day and boarding schools it is essential to know how large each group of children is likely to be in future years, which means that the probable percentage of births for each age group of women has to be computed as accurately as possible.

The bodies that plan retail trade also need population forecasts. They need to know the number of children so as to plan the output of toys, or the number of those reaching manhood so as to plan the output of razor blades and electric shavers. The clothing and footwear trades know that a young man of 18 requires suits, shirts and shoes of certain sizes; but this is not enough—they must know how many young men will be needing these articles next year and the year after.

The sex-and-age analysis of the population is of even greater importance in the sphere of employment. Young people of the rising generation should have the chance to make the best use of their skills and energy. In this respect it is important to rationalise population movement so that young people may know in which part of the country they are most needed.

Lenin once said that science is one of the ways of serving the people. This is probably truer of demography than of any of the kindred sciences. The people themselves are the very subject of demography. In our age, the age of democratic development, demography thus acquires particular significance.

The authors of an article on history in the Encyclopedia of Social Sciences (1) shrewdly remark that genealogy " ...has seen itself gradually replaced by demography, a newcomer, which seems to have delayed its entrance into the world of history until the king of former times was replaced by demos, the sovereign of today, the modern object of the study of historians."

Analysis of demographic data may have results that influence the health of the population; it may improve, prolong and enrich the lives of millions. It is this sort of active demography that must replace passive contemplation, the mere recording of facts, without drawing conclusions, making recommendations or explaining causes.

To paraphrase Marx, one might say that until now demographers have described reality, whereas the important thing is to change it. Demography should not replace the natural sciences, but should work with them to help fulfil man's ancient dream—the abolition of premature death and the assurance of a long, happy and active life.

How can demographers help to increase man's life span?

In countries with developed statistical services every death finds its way into statistics. Every death is registered, a form is filled in and the facts are then summarised and become part of the statistics of mortality. These statistics are a vital source of information on all questions connected with life expectancy.

ONE anatomical theatre bears the inscription: "Here the dead teach the living". Something similar may be said of mortality statistics—the dead teach their descendants, in the mortality statistics the dead again acquire a voice. This explains why many scholars have long been studying mortality figures.

About a hundred years ago the Belgian statistician, Lambert Adolphe Quetelet, said that we know less about birth statistics than about mortality figures, because man is obviously less interested in how he entered life than in how he may leave it. For him the laws of birth have only a relative interest compared to the crucial question of his chances of life and death (2).

Mortality statistics are tremendously instructive. We learn little from the individual death that can help us in the battle for longevity. The death of each individual organism has its own specific causes. But side by side with these, other causes related to general conditions of human life are also operating.

In each case death results from joint action by general and individual causes. It is thus impossible to distinguish the effect of the general causes in each death, but this becomes possible when information is available on a large number of cases taken from statistics covering the population as a whole. When observations are made on a mass scale, everything incidental due to partial causes is removed or neutralised, or is mutually compensated; then a law emerges to reveal the operation of common causes and conditions.

ANOTHER big task for demographers is the study of the birth rate. In the Soviet Union, the radical changes that have taken place in the social position of women, their participation in production side by side with men, have reduced the size of families. The Central Asian peoples, the Armenians and the Azerbaijanians still keep up the tradition of big families, but since these peoples represent only ten per cent of the population of the U.S.S.R. they do not greatly effect the overall national figure.

Family planning of the number of births is causing a steady reduction in the birth rate. Ten years ago the

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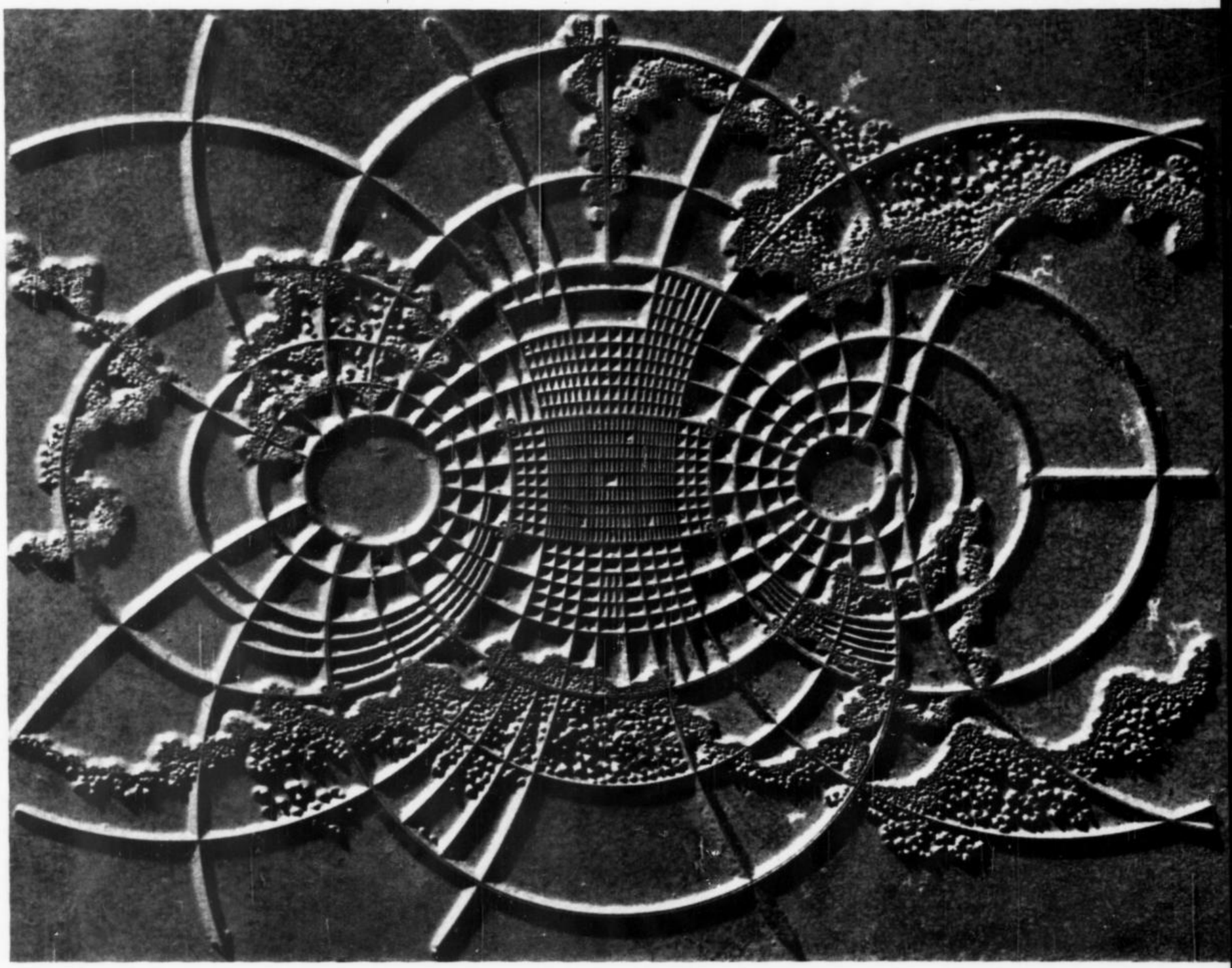
(1) Henri Berr and Lucien Febvre. "Encyclopaedia of Social Sciences", The Macmillan Company, New York, 1948; Vol. 7, p. 364.

(2) Sur l'Homme et le développement de ses facultés, ou Essai de physique sociale *(On Man and the Development of his Faculties, an Essay on Social Physics), Brussels, 1835.*

We completely disagree with Quetelet's attitude to birth records. They are not merely interesting, as Quetelet believed; they provide us with a picture of the future of peoples and nations. (Author.)



The unprecedented expansion of the world's population is everywhere associated with the expansion of cities. Today's architects are seeking to devise rational urban centres for the future in the light of new needs. This relief plan of a functional city—a city as a system—is the work of the Argentinian architect, Eduardo Catalano. The heart is an orthagonal building complex surrounded by a network of concentric structures so that the town can grow, changing in geometry and dimensions, as new requirements arise. It combines open spaces, transport networks and sites for subsequent building. In this way, the town's unity can be preserved even as it is adapted to changed topography and population increases.

Photo courtesy "Science"
© George Braziller, New York.
From "Structure in Art and Science",
edited by Gyorgy Kepes.

coefficient for the whole Soviet Union was 26.6 per cent but by 1965 it had fallen by more than a quarter to 18.5 per cent. This reduction in the birth rate is largely due to the war of 1941-45; in those years there was a sharp drop in the birth rate, and twenty years later, when girls born in the war years began to marry, the annual marriage rate dropped from 12.1 per 1000 (1960) to 8.5 per 1000 (1964).

The reduction in what demographers call the fertility rate does not seem to affect women up to 25 years of age, since most young married women want to have at least one child. In the next age group, 25-29 years, there has been a regular reduction in fertility —more than 10 per cent in the last six years. The decrease is even more marked among older women so that the percentage of young mothers has increased in recent years.

Although the birth rate has dropped, in the U.S.S.R. it is still high enough to ensure an increase in the population with each generation.

Today a scholar cannot confine his studies to his own country. The demographer is interested in world population problems, especially the problems of the developing countries. A maximum increase in the population cannot be regarded as a blessing in all countries and among all peoples. In some developing countries the labour force is not fully employed, and this only serves to retard their economic growth.

Many of these countries possess large areas of unused land, and their crops have small yields, but larger investments than these countries can afford are required to increase the per-acre yields or to extend the area under crops. Thus, statements made by some scholars to the effect that our planet can feed a population thousands of times greater than at present (13,000,000 million has been mentioned) are merely abstract speculation. It is unfortunate that such fantastic statements are printed and publicised.

In European and North American countries the lowering of the mortality rate has been accompanied by a lowering of the birth rate. It seems clear that in a number of developing countries, too, the problem of reducing the birth rate must take its place alongside industrialization, social reform and cultural growth if a sound basis for economic progress is to be assured.

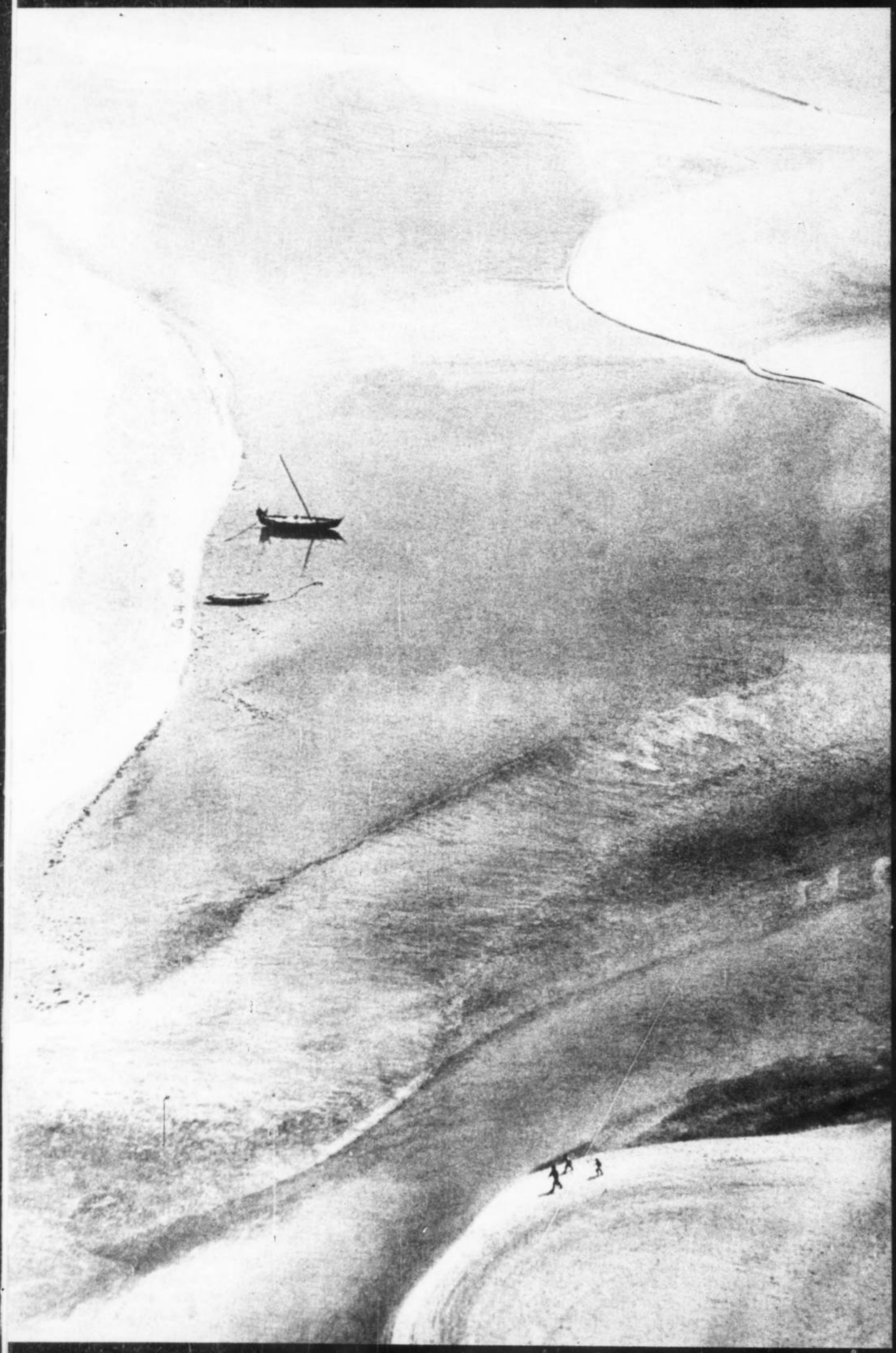
In some of these countries the birth rate will be reduced to a certain extent as a result of women's participation in production, a higher level of culture and the development of industry. In certain countries, however, a demographic policy specifically aimed at smaller families may be of great significance. The example of Japan, where the birth rate has been halved, is particularly instructive.

Recognition of the advisability of reducing the birth rate in a number of countries has nothing in common with malthusianism. Malthus's theory of the two progressions has not withstood the test of time—his assertion that the output of food increases in arithmetical progression has no foundation in fact. Equally untrue is his assertion that population increases follow biological laws. Actually the determining laws are socio-economic laws, since, in the final analysis, the cultural level and the implementation of certain social measures determine the rate of population growth.

The spread of the idea of family planning makes for a richer spiritual life for women and at the same time helps to keep population growth at an optimum level. In other words, each country must search for conditions that are most expedient from the point of view both of the economy and of population growth rates. It is for demographers to ensure that the most rational rates of population growth are maintained.

The demographer's task is not one of passively recording population phenomena—he must be active and help achieve the maximum "per capita happiness" of the people.

If the first man and woman had been born at the start of the Christian Era, and if the world's population had since increased at its present rate (doubling roughly every 40 years), there would now be 250,000 times more people in the world. A city like Paris would have 1,500,000,000,000 inhabitants. A country such as Japan would have 25,000,000,000,000 inhabitants - 54 per square yard.



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A LOOK AT WORLD POPULATION THE DAY AFTER TOMORROW

by Jean Fourastié

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IT seems impossible to foresee man's future. However, we do know that the past determines our present in many realms: language, concept of the world, religion, science, law. Moreover, certain biological and physiological conditions appear to be so characteristic of the human race that if they were absent we would no longer really speak of man as such.

Thus the present largely determines the future and today, unwittingly, we are determining for centuries to come the modes of life of our progeny.

The average expectation of life in the past (that is, of our ancestors up to about the year 1800) did not correspond to man's biological life span. The systematic analysis of many church registers of the past is providing us with a picture of the life span of our forefathers.

From these studies it would appear that the average expectation of life, or the average life at birth, was of the order of 25 years in France at the end of the 17th century and the beginning of the 18th. For certain generations who lived in ancient Europe during periods of great distress and misery, this figure dropped to about 20 years. It is these figures—20 years, 25 years—which give full significance to the presently foreseeable figure: 80 years.

In the past, out of one thousand children born alive, an average of about 430 or 440 reached the age of marriage; tomorrow the figure will be 985.

The average ages at which a person was first married have varied little since 1700, at least in France: they

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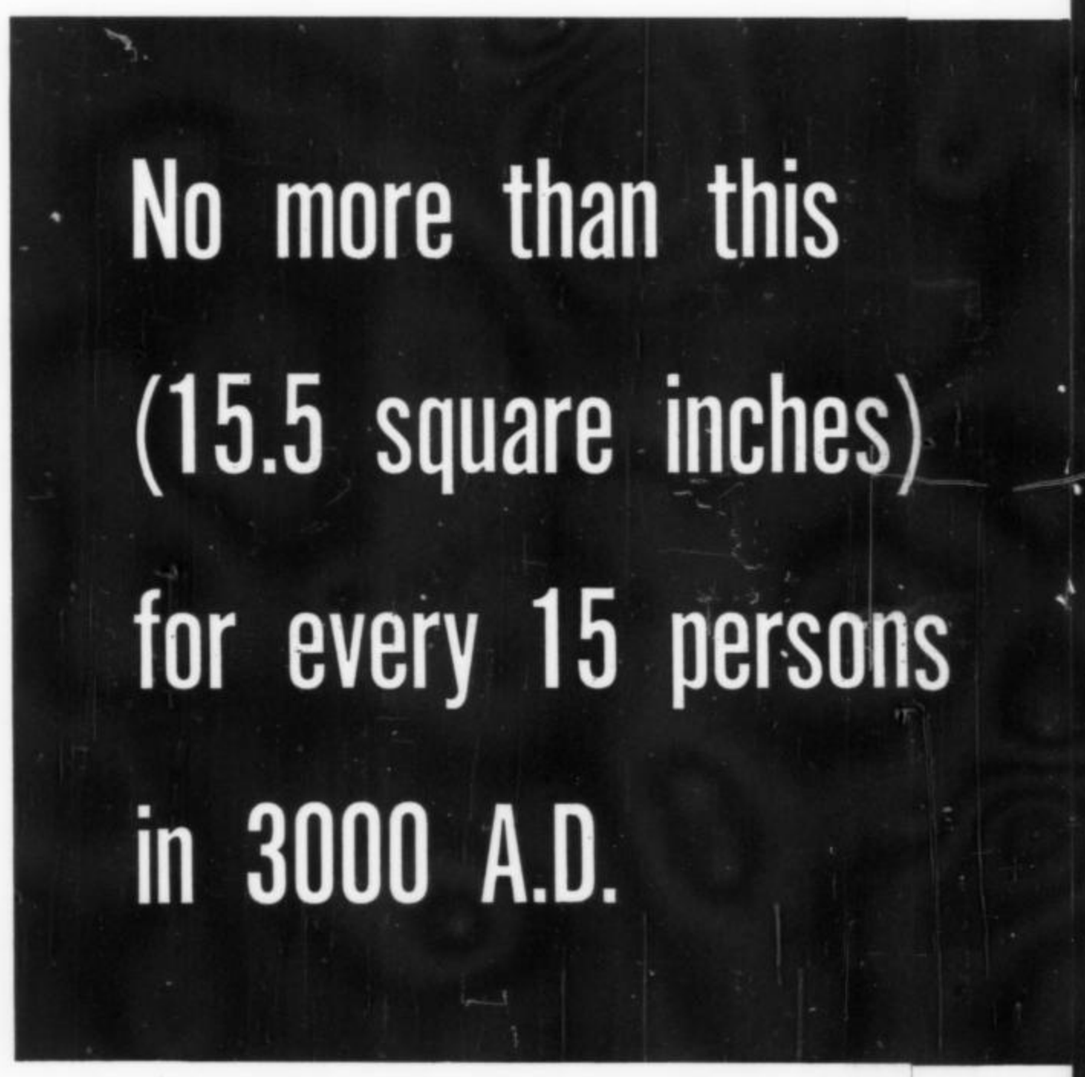
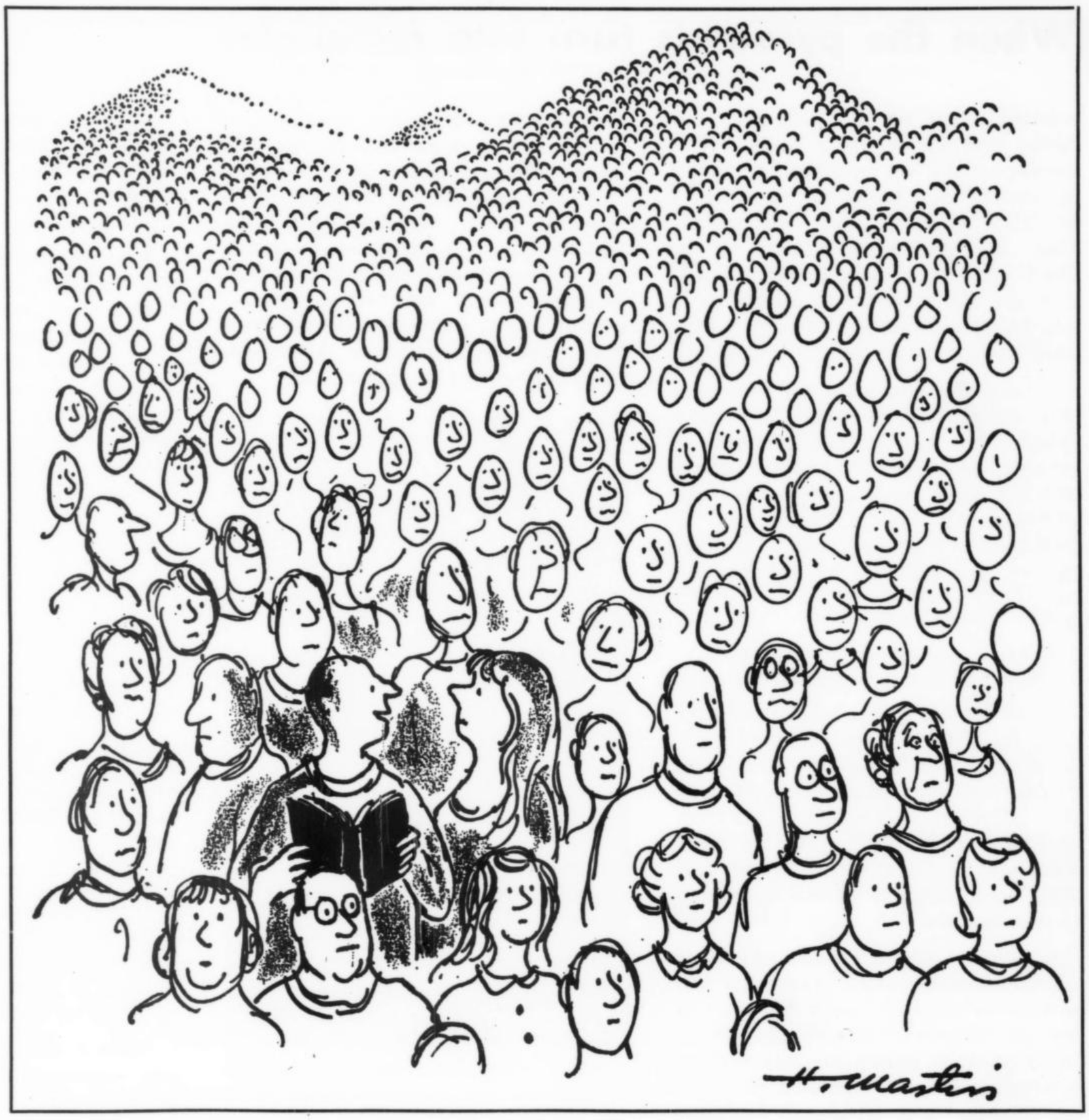
JEAN FOURASTIE, *sociologist and economist, is a professor at the Institut d'études politiques of the University of Paris who has written a number of studies of demographic questions. His publications include "La civilisation de 1975" (new edition, PUF 1964, Paris); "La grande métamorphose du XXe siècle" (PUF 1962, Paris); "Les 40 000 heures" (Laffont 1965, Paris); and in English "Productivity, Prices and Wages" (OEEC 1957, Paris) and "The Causes of Wealth" (Free Press 1960, Glencoe, Illinois). The present article is part of a study published under the title "Three Comments on the Near Future of Mankind" in No. 32 of* Diogenes, *a quarterly produced under the auspices of the International Council for Philosophy and Humanistic Studies with Unesco assistance.*



If the world's population continues to grow at the present rate, there will be 15 people for each 15.5 sq. in. of land by the year 3000.



"Listen to this. A writer way back in 1966 predicted that our generation would have one person to every square foot."

Drawing by H. Martin
© 1966
"Saturday Review"

were 27 for men and 25 for women; today they are 26 and 24. Today, as in the past, one marries for life, but in those days married life lasted 17 years on the average; only one household in two reached its 15th wedding anniversary. Tomorrow married life will last 46 to 48 years.

In traditional society it was at 14, if he lived to that age, that the average child saw the first of his parents die; tomorrow it will be at the age of 55. This is of course gratifying, but it must be pointed out that more than half the personal wealth of a nation will then belong to men and women over 75 years old.

Formerly, parents often died before their children completed their education; tomorrow, assuming the age of marriage to be what it is today, a normal couple will live for 20 to 25 years after the marriage of their youngest child.

At the end of the 17th century in France, but probably in the rest of the world as well, the life of the average father of a family who had married for the first time at the age of 27, could be summarized as follows: born into a family of five children, he saw only half that number reach the age of 15; like his father, he too had five children, of whom only two or three were alive at the time of his death (1).

This man, living on an average to the age of 52—an age which placed him in the venerable ranks of the elders—saw an average of nine persons of his immediate family (not including uncles, nephews and first cousins) die. Among the nine was one grandparent (the other three having died before his birth), his two parents, and three of his children.

He had lived through two or three famines plus three or four periods of high grain prices caused by poor harvests which occurred in approximately ten-year cycles. He had seen various members of his family fall ill—his brothers, his children, his wife, and his parents; he had known two or three epidemics of infectious diseases, not to mention the semi-permanent epidemics of whooping cough, scarlet fever, and diphteria.

In former times death was in the midst of life just as the cemetery was in the middle of a village. Since then, death, poverty and disease have been retreating. They are no longer considered man's relentless companions, driving him toward a spiritual life and moral progress, but as accidents or a sort of amputation, an unfortunate mischance which runs counter to man's true nature, and which must not only be opposed but checked and brought under control.

There is no doubt that the increase in the average span of life will have a

CONTINUED ON NEXT PAGE

(1) The United Kingdom was able to break away from the traditional situation a little earlier; but a half-century or so is not important in this matter.

When the pyramids turn into rectangles

marked effect on the individual, the family and society as a whole. The consequences will be powerful enough to modify our behaviour, the moral structure of society, our legal institutions, and our whole attitude to life itself. But the demographic consequences alone appear to be the most significant and they will certainly weigh most heavily on the future of mankind.

Indeed, the single fact that less than 450 children out of 1,000 born alive reached the average age of marriage in traditional society whereas about 980 will reach the end of the average child-bearing age in the future, is indicative of the basic pattern of rapidly rising population we are headed for.

MAN'S appearance on earth goes back five or eight hundred thousand years; four thousand years before Christ humanity still numbered less than 10 million; 100 million at the birth of Jesus; and 2,400 million in 1950; there will be 7,000 million in the year 2000, according to estimates of the United Nations.

I do not wish to discuss the level of stabilization which humanity will eventually reach, or even if there will be an effective stabilization level, although this seems to demand an affirmative answer. I should like here to consider the types of humanity which would result from different levels of population.

Let us consider two extreme hypotheses regarding conditions of habitability of our planet. In the first man modifies neither the physical geography of the world nor the climates (Hypothesis A). In the second hypothesis man manages to fill in a portion of the seas by tipping the mountains into them, so that all *terra firma* would become habitable (Hypothesis B).

With Hypothesis A there would be scarcely seven thousand million hectares in which one might live without feeling like a political deportee or a scientific guinea pig; with Hypothesis B there would be 15 thousand million hectares.

Now let us refer to Table 1, which lists a few figures familiar to all geographers.

It is simple to calculate the world populations that would result from the extension on a world scale of the various densities mentioned in this table. I would merely note that each of the seven thousand million hectares of Hypothesis A was already in 1960 more heavily populated on the average than was each of the 35 million hectares in France under Louis XV in the 18th century. It may also be noted that in the year 2000 these same seven thousand million hectares will have a slightly higher population density than that of present-day France (0.9 inhabitants per hectare as against 0.8).

TABLE 1

Number of Inhabitants per Hectare of Various Populations

Paris, municipal limits, 1959.	280
Built-up area of Paris, 1959.	50
Paris, densest neighbourhoods, 1959	800
Paris in 14th century	700
New York, 1950	100
Washington, 1950	50
London, 1956	45
West Berlin, 1957	46
Imperial Rome	700
Belgium and Netherlands, 1958	3,4
Fed. Rep. of Germany, 1959	2,2
United Kingdom, 1957	2,2
France, 1959	0.82
France, 1750	0.4
Mainland China, 1957 (2) ..	0.65
United States, 1959	0.23
U.S.S.R., 1959 (2)	0.09

AS for the density which the city of New York supports at the present time, it would permit the sustaining of life for 700 thousand million persons under Hypothesis A and 1 billion 500,000 million (1,500,000,000,000) under Hypothesis B. If we assume the rate of increase for the years 1950-60 (the world's population doubling every 40 years) these figures would be reached by the year 2200 with Hypothesis A and by 2310 with Hypothesis B (3).

In comparison one may recall that the total population of the world in 1935 could have been contained in a single town having the density of Paris and a diameter of the distance between Chartres and Rheims (about 250 kms or 150 miles).

I do not believe that it was out of place when I used the term "types of humanity" to designate the populations which have existed in the past, which exist today and will exist tomorrow as a result of these different densities. Indeed, these density figures are so widely different that they imply radically different ways of life, each in turn resulting in a different intellectual and physical environment.

IT takes no great stretch of the imagination to realize that between the man living in a natural environment such as that of France in 1750 and the man of the future inhabiting an endless town of the density of New York stretching over thousands of kilometres, there are many points in common with animals living in the open forest as compared to those confined in a zoo.

The least one can say is that the problem deserves to be studied and that we have little time (300 years is nothing to meet a biological problem) in which to solve it.

Table 2 shows how sensitive, relatively speaking, the world will become to moderate or even slight rates of population increases, and how difficult it will be to check the process once a certain threshold has been crossed. It is well established in the realm of geometric progression that beyond a certain threshold absolute numbers become so enormous that even a radical or drastic reduction in the coefficient of growth can no longer stop the runaway increase in absolute numbers.

From the time of Pericles to the year 2000 the global population will have been multiplied by about 100 (in 25 hundred years), but an equivalent increase (that is to say, a new multiplication by 100) would lead to average densities of 100 persons to the hectare. These same figures show the small value of the cosmic type solutions (passage from Hypothesis A to Hypothesis B as described above, or populating the Moon or neighbouring planets.)

These solutions which require vast technical feats would provide only very slight easing of the situation once the number of human beings had reached about a hundred thousand million (the

(2) The densities of these countries are calculated here on the basis of total geographic area. Obviously much of these lands is effectively cultivable and habitable only in a hypothesis similar to Hypothesis B.

(3) It can be seen that Hypotheses A and B, which are so different from each other from the technical and geographical point of view, differ very little from the demographic standpoint.

surface of the Moon is only one-fiftieth of the Earth's, that of Mars a quarter; only Venus is of the same dimensions as Earth, but astronomers today say that it is very inhospitable.)

The most striking fact is the opposition which exists between man's natural biological faculties of reproduction and the perspectives opened up by the raising of his average life expectancy to 80 years. The increase noted from Pericles' day to our own has been achieved with natural fertility (an average of about 4.1 or 4.2 children per average marriage, corresponding to about six children per complete family) (4).

BUT in the future almost all families will be complete families. Furthermore, advances in medicine are reducing and will reduce the incidence of congenital sterility. Natural fertility would then produce at least six children per average family, that is, a reproduction rate of 1.65, assuming that the present death rate is maintained and that the celibacy rate of about 10 per cent remains constant. This would double the number of the potential parents in 20 years, which would lead humanity into a growth twice as rapid as the present, and from today's total of three thousand million the population would reach 700 thousand million in a century and a half.

I say this only to show what would occur in the near future with the continuation of *the immemorial birth rate*, which demographers call the "natural or spontaneous birth rate." If it is assumed that this cannot happen then one must assume that the sexual behaviour of present-day and future mankind already differs and will greatly differ in the future from natural behaviour. Table 2 shows that, even with the birth rate greatly reduced, the long-term increases remain large, that even with an average of three children per family, the population of the world would double in 65 years.

However, the main purpose of table 2 is to show that the demographic problem will become one of the great problems of the near future of mankind. It may be conceded that it will become acute when densities are reached of the order of ten inhabitants to the hectare (70 thousand million people); yet even with the rate of growth of "highly developed countries," such as the United States, this acute point would be reached at a time when the great-grandson of my grandson would normally be alive.

IT will be seen from table 2 that contrary to general opinion, little difference, as far as the crucial point and the date it is reached are concerned, exists between the birth rates of the United States and of the whole of the rest of the world today (a mere 30 years delay to reach a density of ten per hectare and 50 years for a density of 100).

Even between the rates of mainland China and America the delay in reaching density ten is only 45 years! Only a much slower birth rate, such as exists in France today, substantially postpones the time when the crucial point is reached though it is still astonishingly close at hand when viewed on the time-scale of life on earth.

Of course what previous generations have done future generations can undo. By limiting the number of children per household to one the human race would be reduced, after the death of the parents, proportionately from ten to four and a half. Perhaps our descendants will have recourse to successive pulsations of growth and contraction of this kind, each phase stimulating the contrary reflex.

But even if the austere one child per family rationing were to be instituted it would take four generations to go from density ten to density one-half, which was that of France in 1750; economic and social conditions would seem to render impossible—or at least extremely perilous—such drastic deflations, or even much more gradual ones.

Table 2, then, seeks to show the types of humanity which would exist in the near future if the marriage and fertility rates observed at present in certain regions were generalized throughout the world. If we assume that one day it is generally agreed to stabilize the world's population at a certain level and by a specific date, even then mankind's population worries will not be over.

TABLE 2

Growth rate and dates at which, according to these rates, population density will reach ten and one hundred inhabitants per hectare on seven thousand million hectares.	No. of years in which population doubles	Date Density reaches 10 persons/ hectare	Date density reaches 100 persons/ hectare
Average of six children per family (natural birth rates)	20	2050 A.D.	2110 A.D.
Average of four children per family	31	2105	2190
Present world view (average hypothesis, United Nations 1950-2000)	40	2150	2270
Present rate in mainland China (1953-58)	35	2135	2240
Present rate in United States (1950-58)	47	2180	2320
Average of three children per family	65	2235	2420
Present rate in France (1955-59)	105	2370	2715

THE world has had no real experience of a stabilized population with a long life expectancy. The little we do know gives cause for alarm. We know, for example, that a stagnant population curve has characteristic economic, social and moral effects which can be extremely serious.

In such a population the *pyramid* of age distributions would become almost a *rectangle*. There would be almost as many persons aged 60 to 80 as there were children and adolescents under 20 years.

More particularly, the decisions that limited number of the population to a fixed figure would have to be deliberate, whereas traditional humanity never knew any but unconscious mechanisms in this area.

As our ancestors knew, it was food which limited the population by the pitiless rigour of famine. The very slow advance in agricultural techniques thus had as a corollary a very slow increase in the total population. In the 18th century two hectares of average land in a temperate climate were still needed to feed one man. Forty million arable hectares in France fed 20 million Frenchmen.

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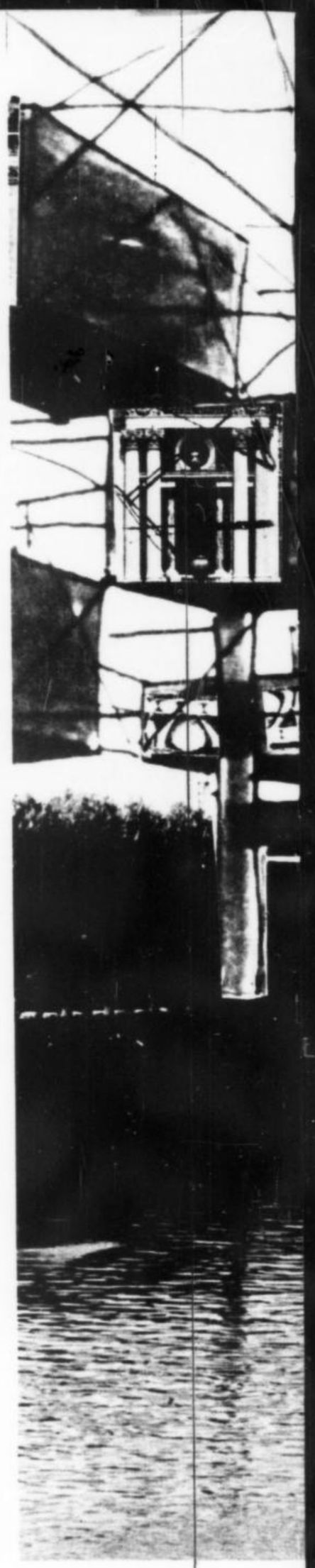
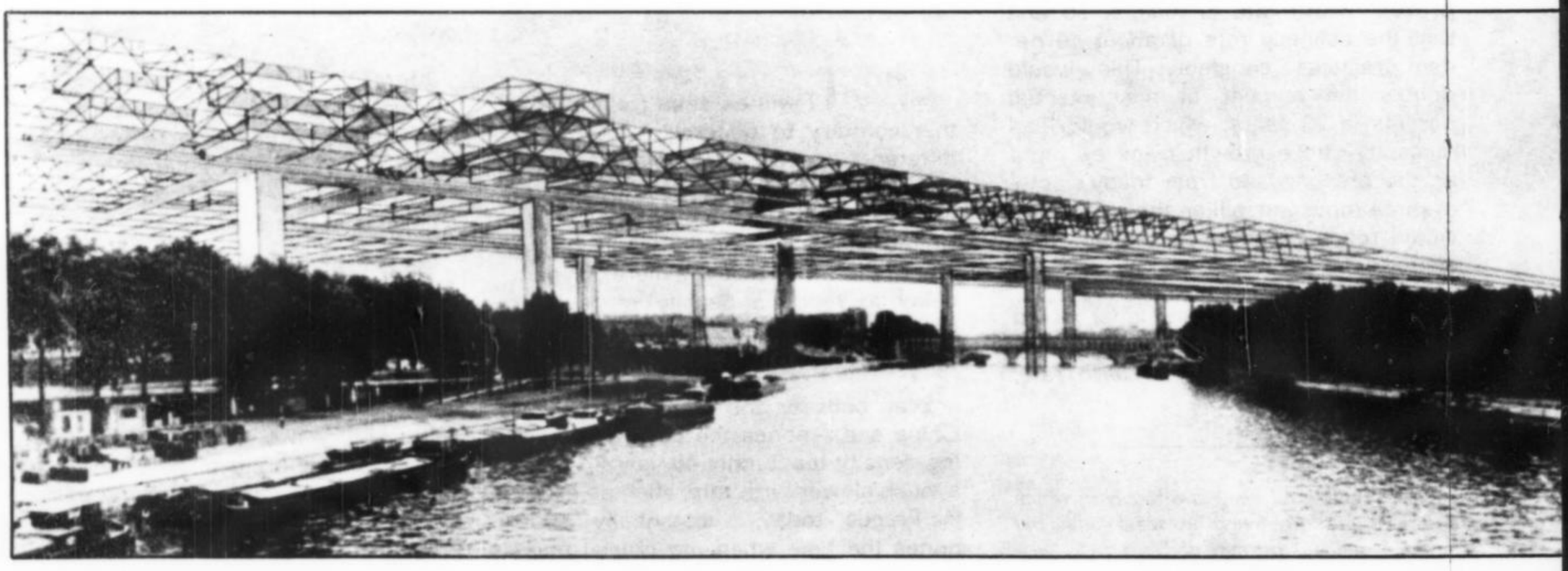
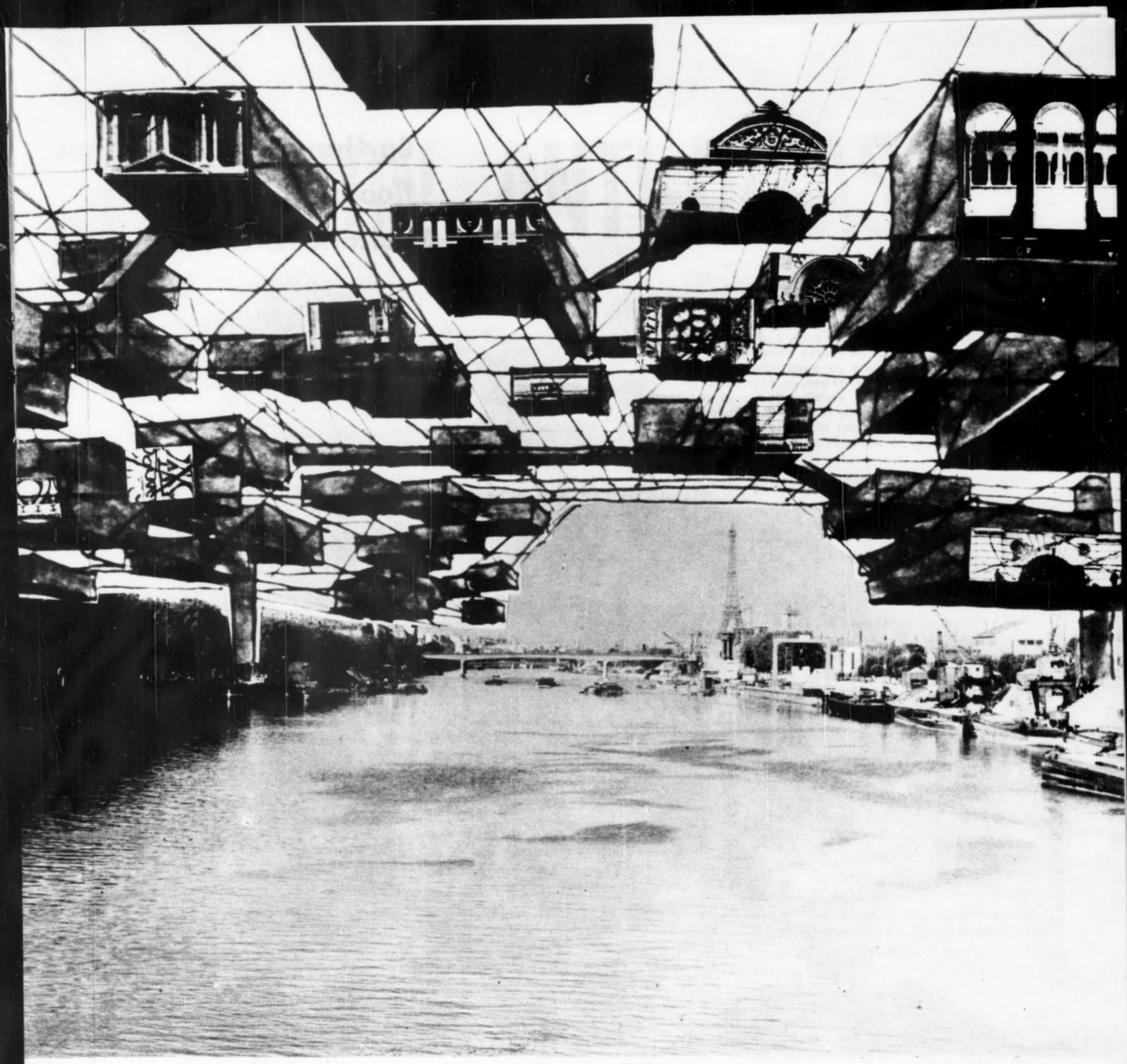
(4) A complete *family is a family in which both parents are living at least until the mother reaches the age of 50.*



Photos © Jean-Pierre Aubert, Paris

HANGING CITIES AHEAD ?





CONVENTIONAL architecture, even in the form of skyscrapers, may soon be inadequate to meet the problems arising from the population explosion while increasingly complex technology makes huge urban centres a necessity.

The creation of "space cities" hanging above those already existing would mean that more room would be available for housing and agriculture. The French architect Yona Friedman has devised a type of "mobile" architecture which could be expanded and shifted within an immense metal framework mounted on piles and which could be suspended over cities.

Above left: model of the towers of a functional complex incorporated in the network.

Left: the sort of "space district" which might cover Paris, for example. Above: residential district over the Seine: the model superimposed on the photograph of the river banks, with the Eiffel Tower in the background, gives a clear idea of how one city could be "hung" over another. The space town would be air-conditioned and reserved for pedestrians. Yona Friedman maintains that the whole of Europe's population could live in between 100 and 120 of such space cities.

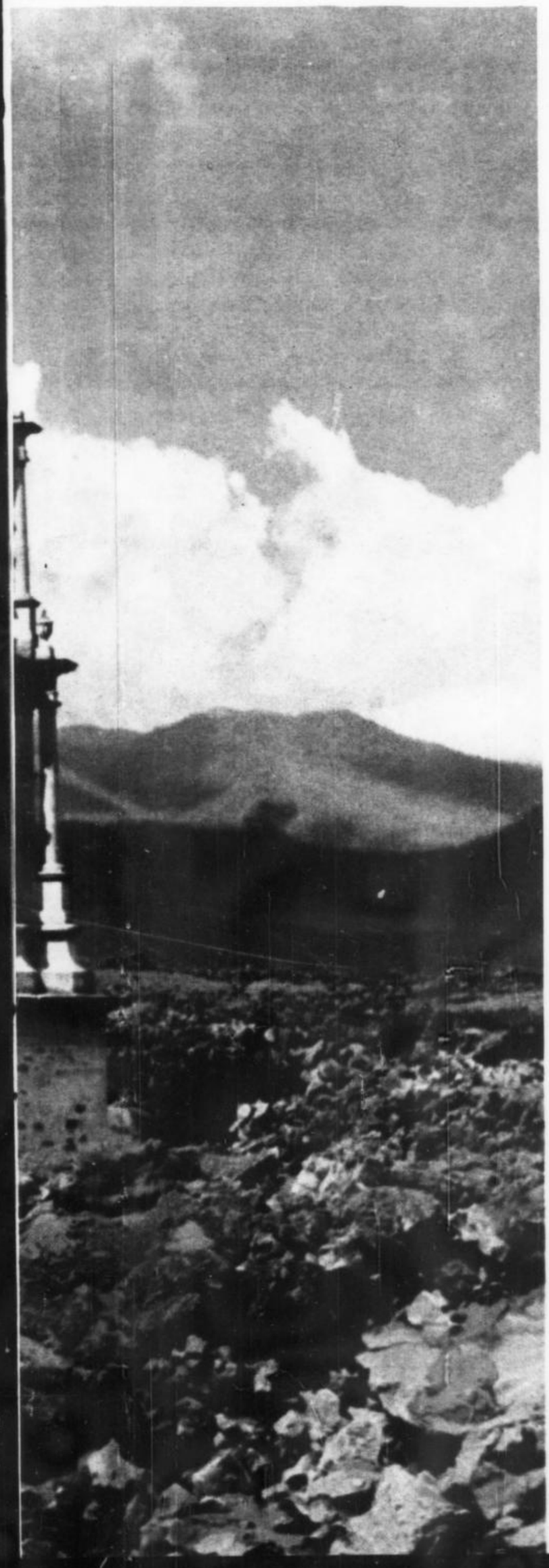
Earthquakes, hurricanes, floods, tidal waves, volcanoes, landslides...

One night in February 1943, a volcano suddenly sprouted from the middle of a Mexican cornfield. Within six months it had built up a huge cone and spewed forth a sea of lava which engulfed the nearby village of San Juan until only its church tower emerged (shown in photo with Paricutin, as volcano was named, in background). Eighteen months later, an eruption destroyed the nearby town of Parangaricutire. By March 1952, Paricutin, now 400 metres (1,300 feet) high was extinct, its eruptions ceasing as suddenly as they had begun.

Photo © Western Ways Features - Tad Nichols

OPERATION ANTI-DISASTER

by Edward D. Mills



THROUGHOUT the ages man has battled against the forces of nature, and one of the battle fronts has been the field of natural disasters: earthquakes, volcanoes, floods and storms.

History and legend record these events, from the Flood described in the Book of Genesis and the eruption of Vesuvius which finally destroyed Pompeii in the year A.D. 79 to the 1963 earthquake in Skopje and the report from Pekin, on March 11, 1966, of a severe earthquake in the Hopei province of Northern China.

Because of the unforeseen character of natural disasters they have frequently been classed as "acts of God," but scientists are beginning to find ways of at least forecasting certain natural phenomena, even if as yet no means are available for preventing them.

The urgent need is to mobilize our scientific and technical skills on a properly organized international basis, so that the devastation that follows in the wake of these catastrophes can be minimized and the appalling loss of human life and property prevented or, at least, reduced.

For convenience, natural disasters may be classed in three main categories:

- earthquakes, volcanic eruptions and landslides;
- hurricanes, cyclones and typhoons;
- floods resulting from storms, tidal waves, etc.

But the natural forces present at any given disaster area may well include elements from all three. Earthquakes may cause landslides and tidal waves (tsunamis) and hurricanes may spread damage not only by wind but also by flooding due to torrential rains.

One of the most extensive natural disasters of modern times was the earthquake in Japan which in five minutes destroyed Tokyo and Yokohama in 1923; in this instance the resultant fires were aggravated by a typhoon. The total of persons killed and injured was at least a quarter of a million while the damage to property was estimated at £900 million.

EARTHQUAKE activity and active volcanoes indicate that the earth's crust is still unstable in certain areas. Earthquakes are sudden adjustments of parts of the crust in response to pressures generated during mountain-building and volcanic activity. Presentday earthquake and volcanic belts follow the more recent belts of mountain-building, the Andes, Rockies, Himalayas and Alps.

The most severe recent earthquakes have been in Morocco and Chile (1960), Iran (1962), Libya and Yugoslavia (1963), Alaska and Japan (1964). The total loss of life in these exceeded 25,000 and damage has been estimated at over £500 million.

There appear to be two main hurricane belts in the world. The first is along the West Indies which lie near the Tropic of Cancer in the Caribbean Sea. The hurricane path usually follows the curve of the islands and runs from Trinidad and Tobago, past the Lesser Antilles and then through to Haiti and Cuba. An example of this was the hurricane Flora in 1963 which devastated nearly everything in its path, killing thousands of people and destroying the homes of tens of thousands.

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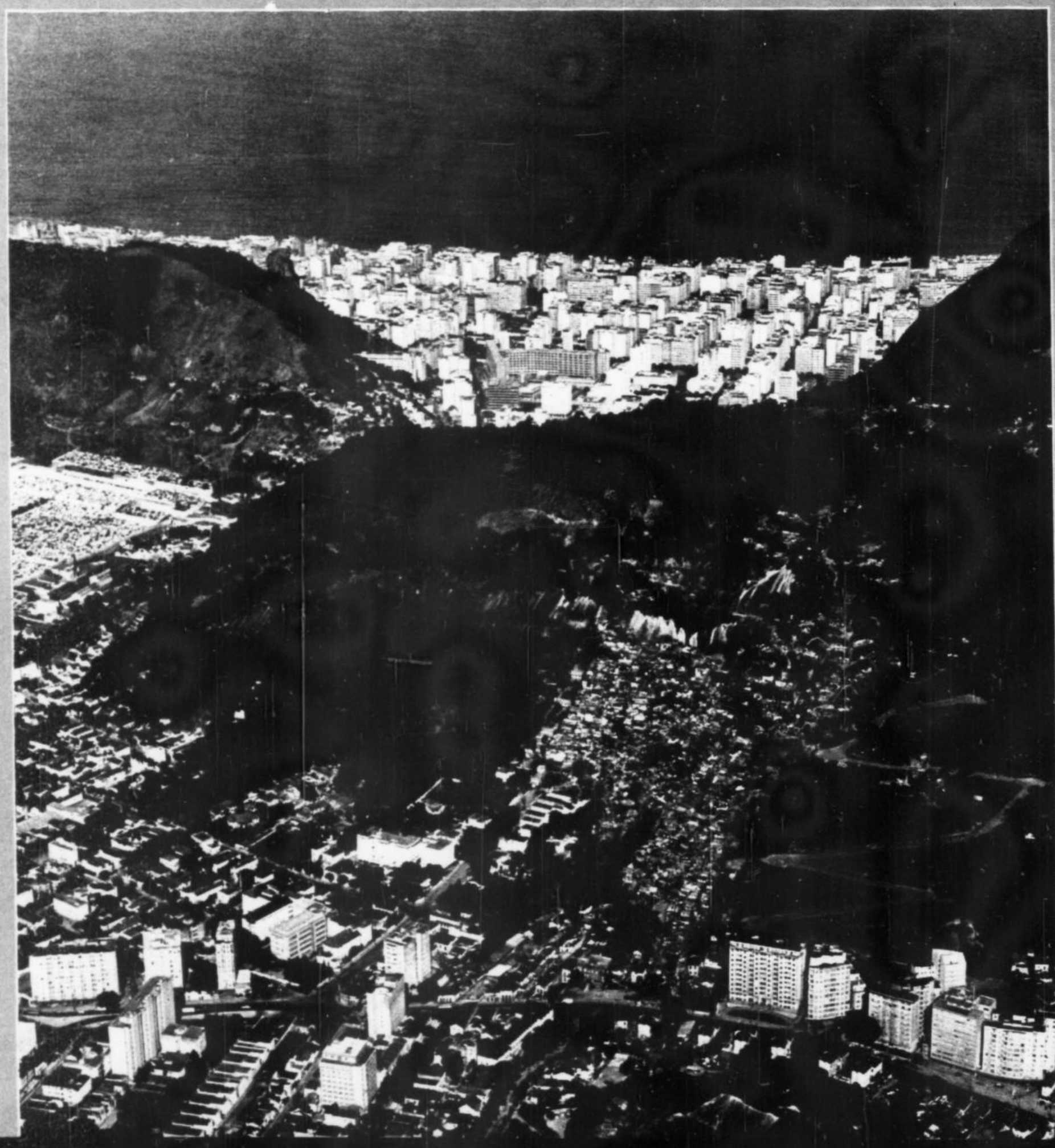
EDWARD D. MILLS *is a member of the Council of the Royal Institute of British Architects. He is responsible for the design of a number of important buildings in many parts of the world. He is the author of several books on architecture and is especially interested in the problems of school architecture. He has been concerned with international relief work for 30 years past.*

Landslides in the 'Favelas' of Rio

In January and March 1966, torrential rain on Rio de Janeiro (left) set off disastrous landslides, especially in the "favelas", or shanty towns, which cling precariously to Rio's steep hillsides (right and below, centre of photo). Over 250 people were killed and 4,250 homes damaged or destroyed. A Unesco mission has been in Rio studying the causes of the disaster. One of its members, Mr F.A. Soeiro, a consultant engineer, reports that the gravity of the destruction was due not only to rain and the tropical climate, but also to several other factors: the topography and geology of the area, the local hydrographical system and the rainwater drainage network, problems of accelerating urban development, the destruction of protective vegetation. Rio's town-planning problems are typical of many other tropical cities in Latin America, Africa and Asia. The search for long term solutions is thus of value to many countries and calls for the mobilization of large-scale resources for international studies.

Photos © P. Almasy, Paris



Emergency technical aid service

Jamaica and the Dominican Republic were not in the path of the hurricane itself, but suffered considerable loss of life through heavy flooding. Many villages remained isolated as a result of the floods and the destruction of roads and bridges. Hurricane Flora lasted from September 30 to October 9, 1963 and finally blew itself out over the North Atlantic.

Between 1959 and 1963 there were three major hurricanes in this area: in 1960, from the Caribbean to New England; in 1961, British Honduras (which forms a semi-circle with the Antilles); in 1963, Trinidad and Tobago, Dominican Republic, Haiti, Jamaica and Cuba.

The second tropical storm belt covers the Far East, both north and south of the equator, along the shores of the Pacific Ocean. Eight major typhoons have been recorded in recent years. Cyclone disasters also occured in 1960 in East Pakistan, which was hit twice in October 1961 by another, and yet again in May 1963. Each time the cyclone attacked the same area—Chittagong. Over 14,000 people were killed and 85 per cent of all houses were totally or partially demolished. In September 1963 Hong Kong and Formosa were both struck by typhoons and thousands of houses were destroyed.

VOLCANIC eruptions occured in 1963 in Costa Rica and Indonesia where 1,700 people were killed and 400,000 left destitute. Up to then the most recent major volcanic eruption was the one that shook Tristan da Cunha in the South Atlantic, in 1961, when the islanders were all evacuated and sent to the United Kingdom. Most of them returned to the island later.

Major dam and flood disasters appear to have occurred mainly in Europe, the Middle East and South America in recent years. There have been seven major dam disasters, some due to land subsidence, a few caused by faulty construction.

The heavy toll of life and property caused by natural disasters underlines the need for co-ordinated international emergency action, for it is unfortunately a fact that these catastrophes often overwhelm countries least able to cope with them.

While the picture of world devastation is appalling, the remarkable work of official and voluntary relief organizations at times of natural disaster is something of which we may be justly proud. United Nations agencies such as Unesco, Unicef, FAO, WHO, together with the International Red Cross and many other bodies, have contributed material and technical aid over recent years to devastated areas with commendable promptness and unstinting generosity. Food, medical supplies, clothing, building materials and money have all been provided in considerable amounts. Governments from all parts of the world have made emergency supplies, equipment and manpower readily available.

AT the time of the Skopje earthquake disaster, for example, massive aid for the stricken population was forthcoming on an international scale. Over forty Red Cross Societies sent help in goods and money. The Governments of Australia, India, Greece, the U.S.S.R., the United Kingdom, the United States of America, and many others sent not only food, medical supplies and money (either as gifts or long-term loans) but also provided completely equipped mobile hospitals, building materials and prefabricated houses.

Soviet Army engineers and a detachment of the Royal Engineers from Britain worked side by side clearing debris and carrying out heavy rescue and demolition work. Even comparatively small charitable organizations like the Round Table from Britain bought and equipped fifty caravans to serve as temporary homes and towed them across Europe in convoys as their practical gesture of goodwill and sympathy.

Similar examples can be given for all the catastrophes which have overwhelmed countries unable to cope with disaster situations from their own resources. Yugoslavia, Iran, Chile, Morocco, South Vietnam, Pakistan, British Honduras, Mauritius, and many other countries have all been greatly assisted by the generosity of the people of goodwill of all nations at the time of their national need.

A recent report of the Skopje disaster by Adolf Ciborowski says: "The international help given to Skopje during the first stage of reconstruction was very valuable, not only from the material point of view, but especially because of its social and morale-boosting consequences."

Thus it can be seen that, at the time of natural disaster, emergency assistance flows readily from national and international philanthropic societies, governments and United Nations agencies.

It is, however, an unfortunate fact that sometimes such well-intentioned help is unco-ordinated and often given without adequate knowledge of the real needs and priorities. At the same time, however valuable many of the gifts and the offers of assistance may be, it is often the case that they are not backed up by expert co-ordinated technical aid.

One of the major problems is the panic and confusion that arise as a natural consequence of any catastrophe. Records of disasters show that, if available, a properly organized Emergency Technical Aid Service could prevent a great deal of this unnecessary confusion, the effects of which are not only felt by the people immediately involved, but can inhibit plans for ultimate reconstruction and rehabilitation.

The 1961 hurricane which destroyed Belize, the capital of British Honduras, killed 400 people and rendered 65,000 people homeless. That the winds of a speed of 200 miles per hour and the giant tidal waves which destroyed everything in their path caused panic and confusion was understandable, but the construction of temporary housing where no water supply was available and other examples of technical muddle were beyond understanding.

This is but a single example which could be multiplied and confirmed by many who have been engaged on such relief work.

OFTEN, in the days directly following a natural disaster, temporary housing is erected on unsuitable sites where essential services are not available. Sometimes refugees are allowed to return to partly demolished dwellings and temporarily repaired structures that should be scheduled for total demolition. The resulting slums, often heavily populated, are difficult to eradicate at a later date.

In both cases lack of forward planning imposes serious restrictions on the town planners in preparing the final reconstruction schemes. Similarly, rubble from badly damaged or demolished buildings dumped indiscriminately without thought for future reconstruction becomes an immediate hazard and an impediment to permanent replanning or improvement.

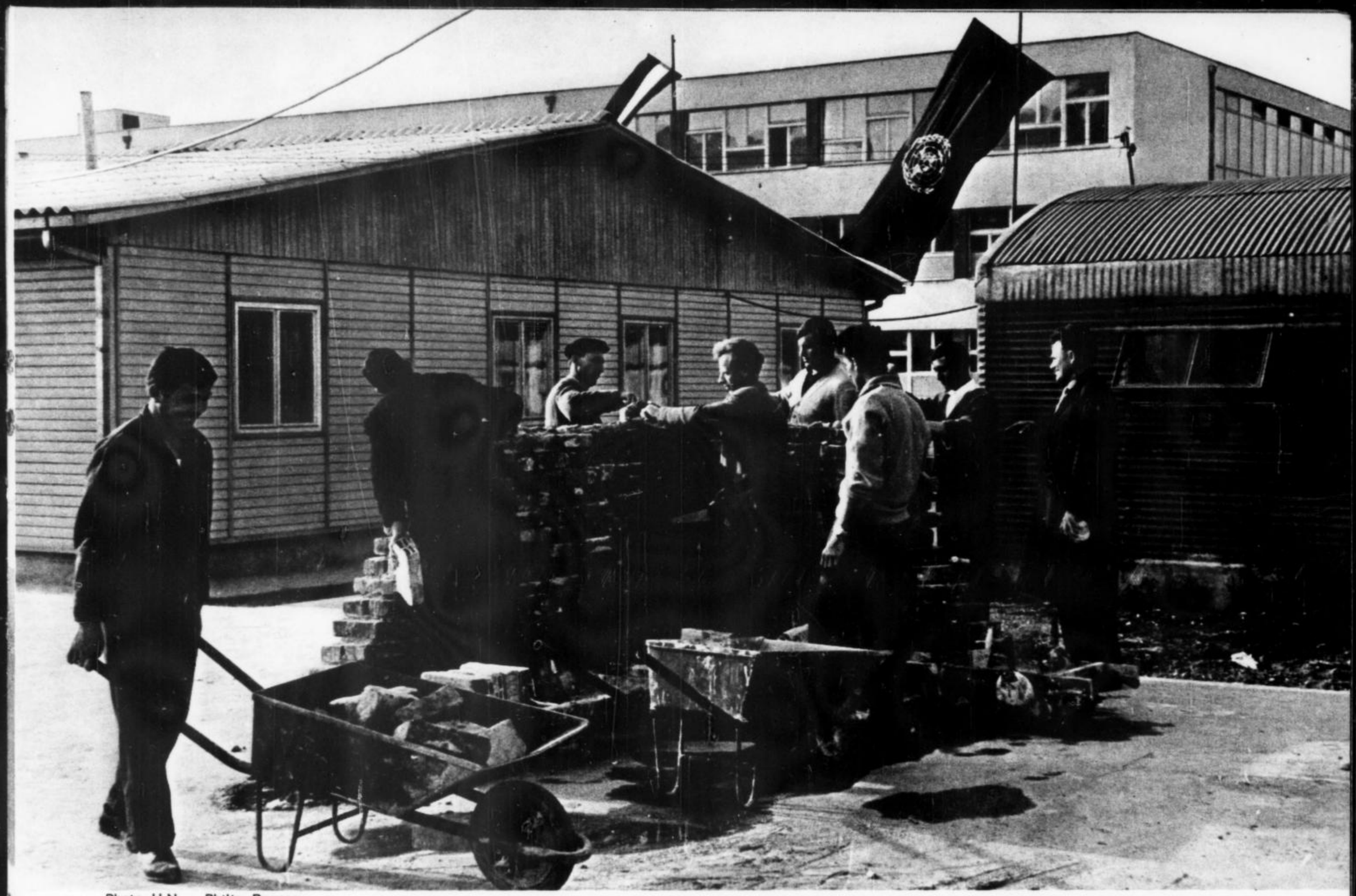


Photo U.N. - Philip Boucas

Medical aid, demolition squads and emergency supplies quickly flowed to Skopje, Yugoslavia, after a major earthquake had devastated the city in 1963. But technical aid was lacking in the first days, and months were needed to mobilize these skills. Today, Skopje is being rebuilt with technical aid from many countries and organizations (including the U.N. and its agencies). Photo shows bricklaying class in special training centre for construction workers at Skopje.

Earthquakes and hurricanes exercise no discrimination in respect of the buildings they destroy; the ancient cathedral and the historic monument are as vulnerable as the slum tenement or the shanty town. But historic buildings are part of a nation's cultural heritage and must be safeguarded to give a town a sense of its continuity and history. In the past, damaged buildings of this kind have often been totally destroyed or have suffered further damage at the hands of well-intentioned but inexpert and inexperienced demolition gangs.

The skill and care with which the historic buildings of Warsaw were restored and reconstructed after the destruction of that city during the Second World War was an outstanding exception. (See Unesco Courier, March 1961.) The same use of organized technical skill and understanding could well be applied in cases where historic buildings have been destroyed or damaged by natural disaster.

At the time of a natural disaster essential services and communications are often temporarily or permanently disrupted and this accentuates the helplessness of the population. Technical experts are needed to determine the extent of damage to water supplies, drainage, electricity, roads, bridges and many other essential services and to advise on temporary reinstatement. Confusion in this field can not only lead to chaos but can be the cause of epidemics and other health hazards at a time when physical resistance to disease is at its lowest level. These are but a few of the immediate technical problems of natural disasters that could be dealt with by an internationally organized Emergency Technical Aid Service.

THE 1963 Skopje earthquake was well documented and received more international attention that any other natural disaster of this century. Modern means of communication meant that within a few hours details of the catastrophe were relayed throughout the world and a flood of sympathy and practical help was made available from many countries. Yet, even here technical aid in the days immediately after the shock was not sufficiently well organized.

The following quotations are from reports in *The Times* (London) of October 7 and 28, 1963, three months after the earthquake.

"Floods are causing the evacuation of Skopje's largest camp settlement in Central Park. Some 7,000 people have lived in tents there ever since last July's disastrous earthquake. This area has now been flooded by heavy rains. Tents and temporary buildings collapsed. Rain-drenched tents are being hurriedly dismantled and transferred to safer sites where, it is hoped, the population will remain until houses are completed. . ."

" . . . Other complications, which might have been avoided if the authorities had approached the problem with a clear idea of what was needed at this stage, have proved too numerous to allow the emergency reconstruction to proceed as fast as it was expected. . . Skopje's problems are being increased by bad organization."

This is not intended to be a criticism of the authorities of Skopje who were faced with an overwhelming task at a time when they were still feeling the physical effects of the disaster and unable to estimate the extent of the calamity.

The fact is that while medical aid,

CONTINUED ON PAGE 22

Three-phase timetable

demolition squads, and gifts of money and kind flooded into the stricken area immediately, the vital need was for technical skills within twenty-four hours (or less). Some months later these skills were mobilized, and now the permanent reconstruction plans for Skopje are being developed and directed by some of the world's most experienced experts.

If UNETAS (a United Nations Emergency Technical Aid Service) had been available, modern jet air transport could have ensured that a skilled technical team was working side by side with the Red Cross rescue and medical teams in a matter of hours, helping to create confidence and avoid the complications which must have made the preparation of reconstruction plans more difficult. Medical and rescue work is accepted as having first priority, but technical aid is of equal importance and urgency.

NATURAL disasters do not, unfortunately, run to a readily discernible pattern; they do not recognize national boundaries or conform to a strict timetable. By their very nature they produce chaos and confusion, often striking without warning and affecting people who are least able to cope with the situation in a logical and organized way.

There are three phases in any disaster, although even these cannot necessarily be separated into distinct and tidy compartments. If the occurrence of the disaster is taken as zero, the ZERO PLUS 1 is the period of rescue of the injured, first-aid for those in physical distress, the burial of the dead, and attention to the immediate needs of the population in respect of their survival, safety, health and welfare.

ZERO PLUS 2 is the period for the provision of temporary shelter, the return of the community to an organized way of life, and the temporary rehabilitation of homeless and often emotionally distraught people. In this period preliminary surveys and records must be made and the broad outlines laid down for the final period.

ZERO PLUS 3 is the period of long-term reconstruction, and the permanent rebuilding of the shattered community.

The experience of recent disasters has definitely shown that the boundaries between periods 1 and 2 are not always clearly defined and that if these two stages in the ultimate return to normality are too widely separated the problems created by the disaster are increased rather than diminished.

If an Emergency Technical Aid Service were available to work in parallel with Red Cross and similar emergency relief services these two apparently separate phases could be usefully combined.

WHILE any natural disaster brings confusion automatically in its train, there is no reason why those who bring physical relief should add to this confusion by unco-ordinated operations and overlapping activities.

Disaster "sight-seeing," which can be an outward and visible sign of international concern, can also cause delay and muddle which is costly in human life and suffering. It is regrettable that sometimes almost the first arrivals on the scene are the "international salesmen" of temporary housing, building materials and equipment.

Phase 2 must, therefore, be telescoped to run concurrently with phase 1, so that even while physical rescue and first-aid work is proceeding, technical aid is available. This must cope with longer-term relief in terms of food, shelter, health, and welfare, and the detailed assessment of the ultimate needs of the disaster area against the background of local and international resources.

While the temporary rehabilitation of the community is vitally important, the preparation of initial plans for ultimate reconstruction is equally urgent at this stage. An Emergency Technical Aid Service must be available to survey the situation, record and analyse the findings, and plan and prepare for the future reconstruction in broad outline so that temporary measures do not make permanent reconstruction more difficult than is necessary.

This initial emergency period of the disaster time-table could be regarded as a period of positive preparation for the recreation of the damaged or destroyed community, just as important as the actual detailed long-term planning.

The third stage, the reconstruction period, is a long-term one, and will of necessity take years to reach complete fulfilment. Many agencies are available to render this form of assistance to a stricken area. The United Nations agencies referred to earlier, central governments, the World Bank, and the United Nations Development Programme are able to make available money, materials, equipment and teams of technical experts (architects, planners, economists, etc.).

The work of these experts takes time, and the execution of their plans may spread over many years. The summary of the report on the Master Plan for Skopje, prepared by the Institute of Town Planning and Architecure, Skopje, was published in October 1965, and represents an immense amount of intensive work by experts drawn together by the United Nations.

In spite of the realization of the urgency of the task and the obvious, harmonious co-operation of all concerned, two years passed from the date of the earthquake to the publication of the Master Plan. This is inevitable, for few cities in the world's disaster zones have ready-made development plans awaiting the fatal moment, nor do they have the fundamental data necessary for the preparation of such plans.

IT is obvious that the organization of adequate funds and long-term technical assistance takes time, and that comprehensive planning is a time-consuming activity if it is to be carried out properly and effectively. Therefore, the emergency collection of data and preparation of broad outline plans by technical experts at a very early stage after a disaster can be of immeasurable assistance to the permanent reconstruction team and make their task both shorter and easier.

Thus, a United Nations Emergency Technical Aid Service could be the strong thread that would link all the various essential parts of the present unco-ordinated but well-intentioned relief and reconstruction agencies that already exist to render help at the time of a natural disaster.

For further information, readers may refer to Unesco's quarterly, Impact of Science on Society *(Vol. XVI, 1966), No. 3. Annual subscription: $2.50; 13/- stg.; per copy: $0.75; 4/- st.).*

Unesco's Director-General looks at ethics in the mass media

THE INTRUDERS

by René Maheu

"La Civilisation de l'universel"—The Civilization of the Universal—is the title of a volume by René Maheu, Director-General of Unesco, which has just been published by Editions Laffont-Gonthier, Paris (1). An English edition is also scheduled to appear. The volume forms part of the series "Inventaire de l'avenir"—Inventory of the future—and consists of a selection of statements, speeches and papers written by Mr. Maheu since he became Director-General of Unesco in 1962. Published with a foreword by Julien Cain of the Institut de France, the book comprises three sections: A Universal Ethical Code for Development; The Educational Mission; and the Universal Significance of Science and Culture. Mr. Maheu argues that, at this decisive moment in history, it is not enough to proclaim men equal in dignity. A much more far-reaching task is involved, one which requires a methodical and unanimous effort for which the international agencies—and particularly Unesco—offer a framework: the patient creation of the material and moral conditions in which all men, wherever they may be, can achieve their own fulfilment and contribute to the building of the world of tomorrow.

The following text, drawn from this book, is the reply sent by Mr. Maheu on 10 May 1965 to the Editor of the French periodical "Plaisir de France" who had asked whether it was incumbent on Unesco to combat abuses by the press and other information media, more especially in the form of sensationalism and scandalmongering.

(1) Price : 10,20 F.

THERE is no doubt that scandal and sensationalism in the press are growing evils which cannot leave indifferent an organization like Unesco which is dedicated to the advancement of human dignity. Unesco's concern is not only with the expansion of education, the dissemination of culture and the development of the techniques of mass communication, but also, and perhaps even more, with improving the content of education, preserving and enriching the quality of culture, and using the mass media for education, science and culture.

Within the context of Unesco's overall policies, therefore, I would be ready to join all those—be they public officials, members of the profession or civic leaders—who are prepared to take an active part in combatting these evils.

But there must be a clear understanding of what evils we are talking about, for not only do they vary in degree of seriousness but they stem from different motives and hence call for different remedies.

There is one category of offense that I would put under the heading of "vulgarity", as witness the hysterical adulation of stars of the stage or screen, or the obsession with intimate or trivial details of the lives of certain celebrities.

Undeniably this is an offense against good taste. It is a perversion of two of the most natural instincts of man—curiosity and admiration. Moreover, this is not done guilelessly but by the deliberate use of purely commercial means for strictly commercial ends.

There is a whole body of literature which seeks to explain sociologically or psycho-analytically the "star mania" of today. But what might really clear the air would be an exposé of the business set-up and technique used to "launch"— that is to manufacture—such stars. Unfortunately, the facts on this part of the story are much harder to come by.

True as all this is, we must admit that no pressure on the individual is involved (nothing forces me to buy that silly paper or that childish magazine; nothing obliges me to listen to that stupid radio programme or to watch that vulgar or vapid show), and the phenomenon is an integral part of economic procedures otherwise looked upon as quite legitimate (such as the commercialism of the mass media and especially entertainment), so that we cannot justify resort to repressive or preventive measures through legislation or government action. This is the domain of social custom, not of law or authority. In other words only the public and the profession can take action here since they alone are implicated.

It is up to the public to choose between quality and trash, and in the final analysis it is the consumer who has the last word through his power either to buy or reject a particular product. I for one have no a priori lack of faith

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Shocking violations of human privacy

in public taste. First of all because I do not believe that all mass-produced goods are necessarily inferior in quality—the triumph of the paperback book and the resurgence of what has been termed the "people's theatre" are two cases in point.

Then, too, experience has shown that when the man-in-the-street is given the possibility to choose for himself, and the alternatives are duly explained and made clear to him, more often than not he will choose wisely.

The "conditioning" process utilized by the entertainment industry excludes by its very nature the possibility of choice, let alone the exercise of judgment and discernment. The answer to this should be the organization of what I might describe as "campaigns of critical appraisal".

As for the mass media—they must draw up their own code of ethics without outside interference. And if I may say so, I think that it is high time this was done. Has the time not come for those who control and work with the information and entertainment media reaching millions of people to recognize that their responsibilities are in direct relation to the fantastic power they now have either to inform or deform, to educate or stultify?

The determination of these responsibilities (apart from the ones laid down by law which represent only a minute fraction of the whole) should no longer be left to the hazard of individual viewpoints, or to arbitrary decisions imposed from the outside by officials unconnected with the profession. What is needed today is a code of ethics for the mass media as it affects society.

Unesco recognized the importance of the mass media in society even in the early years of its existence. It has sought to throw light on this problem by promoting research in the field, and to raise the standards of journalism through aid to schools of journalism.

However useful or even necessary this basic work may be, it is not enough simply because it is purely technical. Unesco has dealt with such technical matters as the situation and the mechanics of the mass media and their modes of operation. A comparable effort is now needed on the ethical plane to define more clearly basic aims and objectives. To put it another way, we must first have a clear idea of what the mass media stand for in order to establish the responsibilities of the journalist, particularly in relation to the rights of the public which receives the information.

This task, I think, is essentially a matter for the profession itself to work out because (and I consider this to be of utmost importance) since freedom of the press is the corner stone of all the mass media it is the members of the profession who should take the initiative in formulating their own fair code of ethics.

That at least is the principle which Unesco has adhered to up to now and which accounts for the discretion it has observed in this matter. Nevertheless, Unesco has followed with deep interest the various attempts that have been made in recent years at the national or international level to induce the profession to define and adopt a code or codes of honour: though still somewhat timid in my opinion, these attempts are nonetheless most encouraging, and one of the recurring preoccupations has been to counteract "the exaltation of sensationalism and scandalmongering". I have no doubt that if it were asked to do so by a consensus of the competent international associations of newspaper owners and editors, as well as the radio, film and press associations of journalists and writers, Unesco would unhesitatingly place its authority and resources behind this movement to give it the breadth and cohesion it still lacks.

Some cases, however, call for far more energetic measures. I am thinking of the type of reporting which respects neither the privacy of love or prayer nor the seclusion of poverty, neither the peace and quiet of a happy home nor the grief and sorrow of death. Here we are not merely confronted with offences against good taste or breaches of social decorum but outrages against the human person.

These intrusions into the private life of the individual have rightly been called a "violation of the personality". (I am not speaking, of course, of that publicity game indulged in by those men and women who make it their business not to have a private life.)

In my opinion, the notion of the "violation of the personality" should be recognized in law, for in the mass civilization to which we are more deeply committed every day, nothing is more precious and more deserving of protection by society than the dignity of the individual. Rough outline or masterpiece—it does not matter which—each person is an irreplaceable statue of Man; and as with the statues in our museums and public parks, I should like to see the crowd kept at a respectful distance, leaving the statue visible but inaccessible.

Against the real excesses—the shocking violations of human privacy prompted by malice or greed, the occasional outcry raised by the public can hardly suffice. Here, clearly, we must have resort—with due precautions but nonetheless with firmness—to the preventive and restraining forces of the law.

Who could honestly object? There are those who perhaps will invoke the "freedom of the press" or the necessities of the "job", but it must be repeated that the purveyor of information has freedom only insofar as the public which he serves has the right to be informed; and the public has no right to know other people's private lives.

These are the two types of offenses and indignities most often committed by a certain sector of the Press when it is blinded by its own power and resources and succumbs to the lure of easy profit or the fury of commercial competition. The first seems to me to come under the head of professional ethics and the second under that of ordinary legislation; but quite clearly neither ethical action nor legislation will be effective, nor indeed can they take form, except inasfar as they are understood and actively pressed by public opinion with a heart to support and if need be impose them.

The welfare of the young would in itself more than justify a mass movement of public opinion of this kind. Admittedly the young are not the only ones threatened by such malpractices. Because of the resilience and fundamental good nature which characterizes youth, young people are often much better equipped to withstand and ward off the demoralizing influences we have been talking about than many adults whose defence mechanisms have not infrequently been slowed down with the passage of years.

Nothing could be further from the truth, in my opinion, than to believe that sensationalism and newsmongering reflect the true taste of young people. The youth of today seem to me on the whole far healthier and more balanced than previous generations. And if they do give vent to certain anti-social forms of rebellion it is not so much for love of violence and the absurd in themselves as a protest against the fact that the world we propose they live in appears to them largely to have made violence and absurdity accepted institutions under the hypocritical cloak of convention.

Nevertheless the fact remains that the young, who represent a quarter of the world's population, have become an important market and that a good deal of money is to be made (the record industry and all that goes with it is one example) by exploiting their eternal yearning for romance, their insatiable appetite for wonder and admiration, and their extraordinary ability to satisfy both of these cravings by accepting symbols in their stead.

We must protect this natural receptivity of youth from the exploitation of commercialism, for it represents the fountainhead of the simple decency, if not always the innocence, of mankind.

Photos © Günter R. Reitz, Hanover

The mighty colossi of Abu Simbel once more in place before the facade of the rebuilt sanctuary. They were cut into blocks, 15 to 30 tons in weight, lifted up a hillside and carefully reconstructed. (Dissection of the two temples produced well over 1,000 blocks of stone). Lines of saw cuts on statues are hardly visible and will be filled in later. Above, the last statue of Rameses II (on left) ready to receive its face. Large parts of second statue, including the head, tumbled to the ground long ago. It will be left in its present state. Below, workers on the site attend a brief ceremony marking the latest stage of reconstruction.

Rameses finds a new home

SIX years after it was launched by Unesco, the international campaign to save the monuments of Nubia has attained its objectives. Sixty countries have taken part in this unprecedented enterprise (see the Unesco Courier, February 1960, October 1961, December 1964, November 1965).

The United Arab Republic and the Republic of the Sudan under Unesco's auspices and with the collaboration of these 60 countries have worked to save all that could be saved as the waters of the Nile rose behind the Aswan High Dam.

Twenty-two temples have been moved; all monuments, inscriptions and rock carving have been inventoried and photographed; all frescoes from the Christian period have been removed from ancient walls and taken to safety; teams of archaeologists from every continent have explored 500 kilometres (300 miles) of the Nile Valley; all archaeological sites have been reconnoitered

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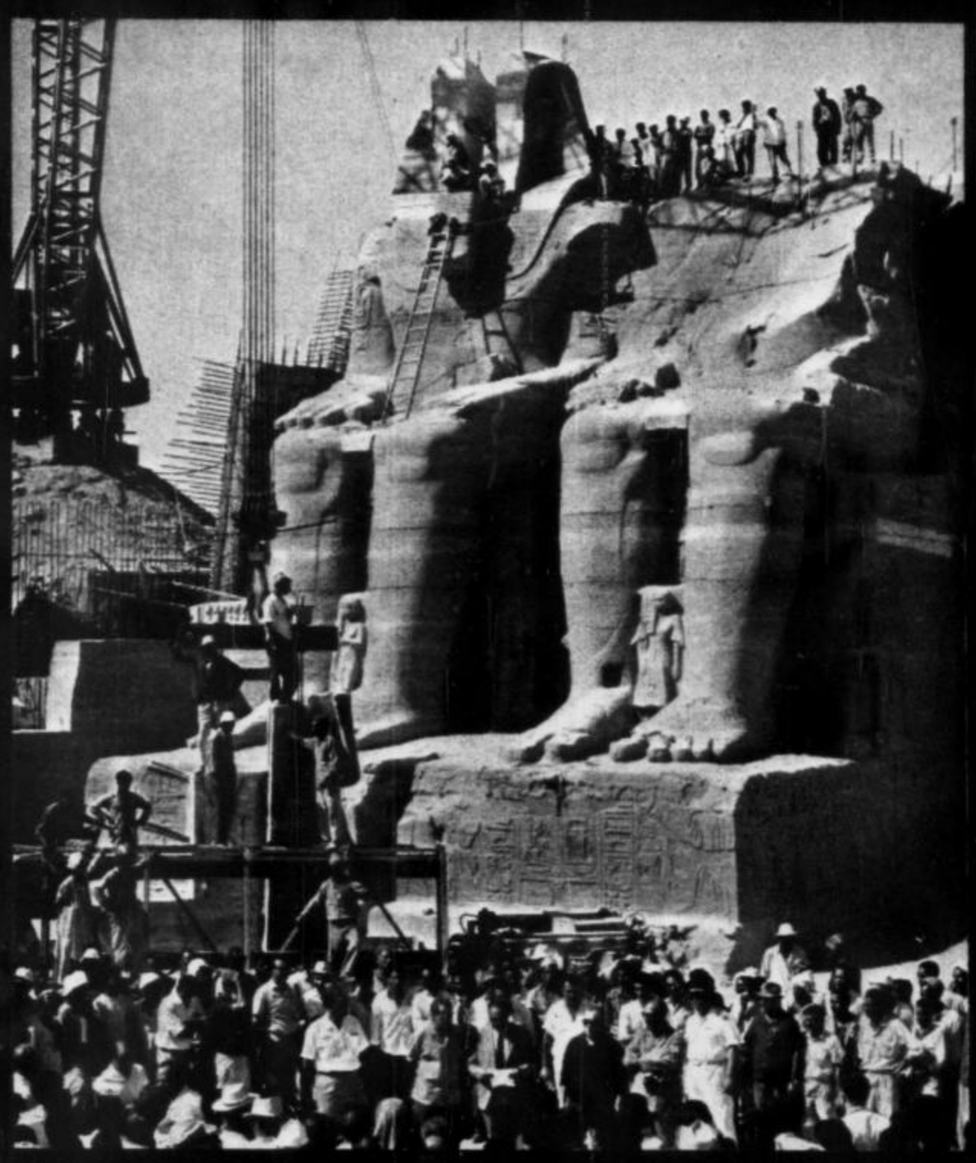
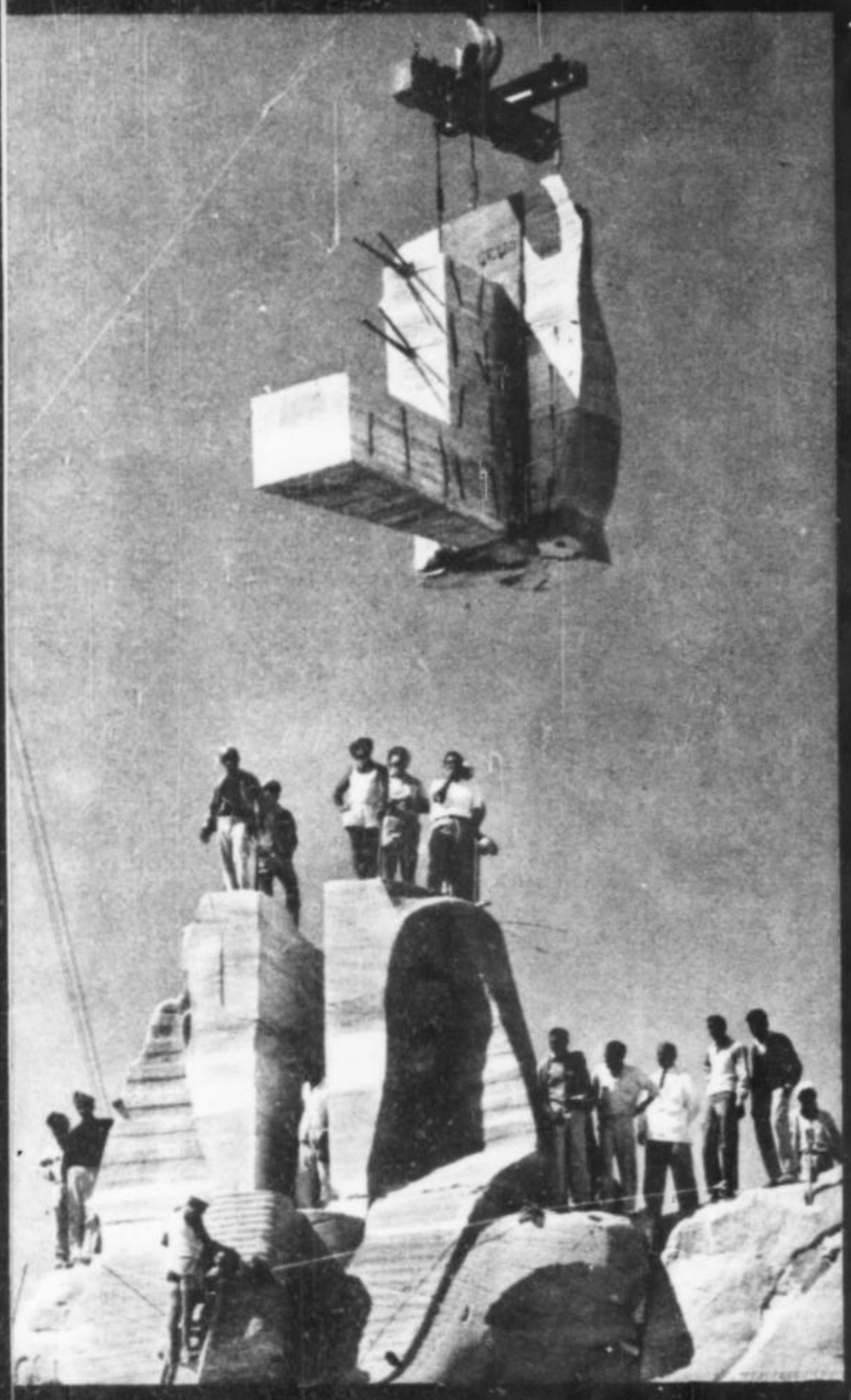


RAMESES FINDS A NEW HOME *(Continued)*



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and prospected, with the exception of a strip 80 kilometres (50 miles) long between the 2nd and 3rd Cataracts of the Nile (the last area to be flooded) which is still being explored.

The two famous temples of Abu Simbel, in the U.A.R., have been completely rebuilt and now stand 64 metres (200 feet) above their original site, today under water. Concrete domes are now being built above the monuments to support artificial hills designed to reproduce the original settings of the temples.

Begun in April, 1964, the monumental task at Abu Simbel will be completed by the spring of 1969—more than a year ahead of schedule.

International contributions from public and private sources to save Abu Simbel totalled nearly $21 million. This figure includes contributions already made or pledged by 50 nations ($17,600,000), the yield from a U.A.R. tourist tax introduced in 1964 ($860,000), proceeds from exhibitions, particularly those organized in Japan by Asahi Shimbun Press ($1 million), and sums collected by the American Committee for the Preservation of Abu Simbel ($1,300,000).

As a token of gratitude, the government of the U.A.R. is handing over certain Nubian temples and a large collection of antiquities from other regions of Egypt to museums in other countries. The temple of Dendur has already been attributed to the U.S.A. and that of Ellesyia to Italy.

It now remains to provide protection for the monuments on the island of Philae in the Nile. These temples are downstream from the High Dam, and unlike the sites upstream are not in danger of complete inundation. They are, however, submerged to about half their height. A plan for the work at Philae will be studied by Unesco and the U.A.R. Government in March 1967.

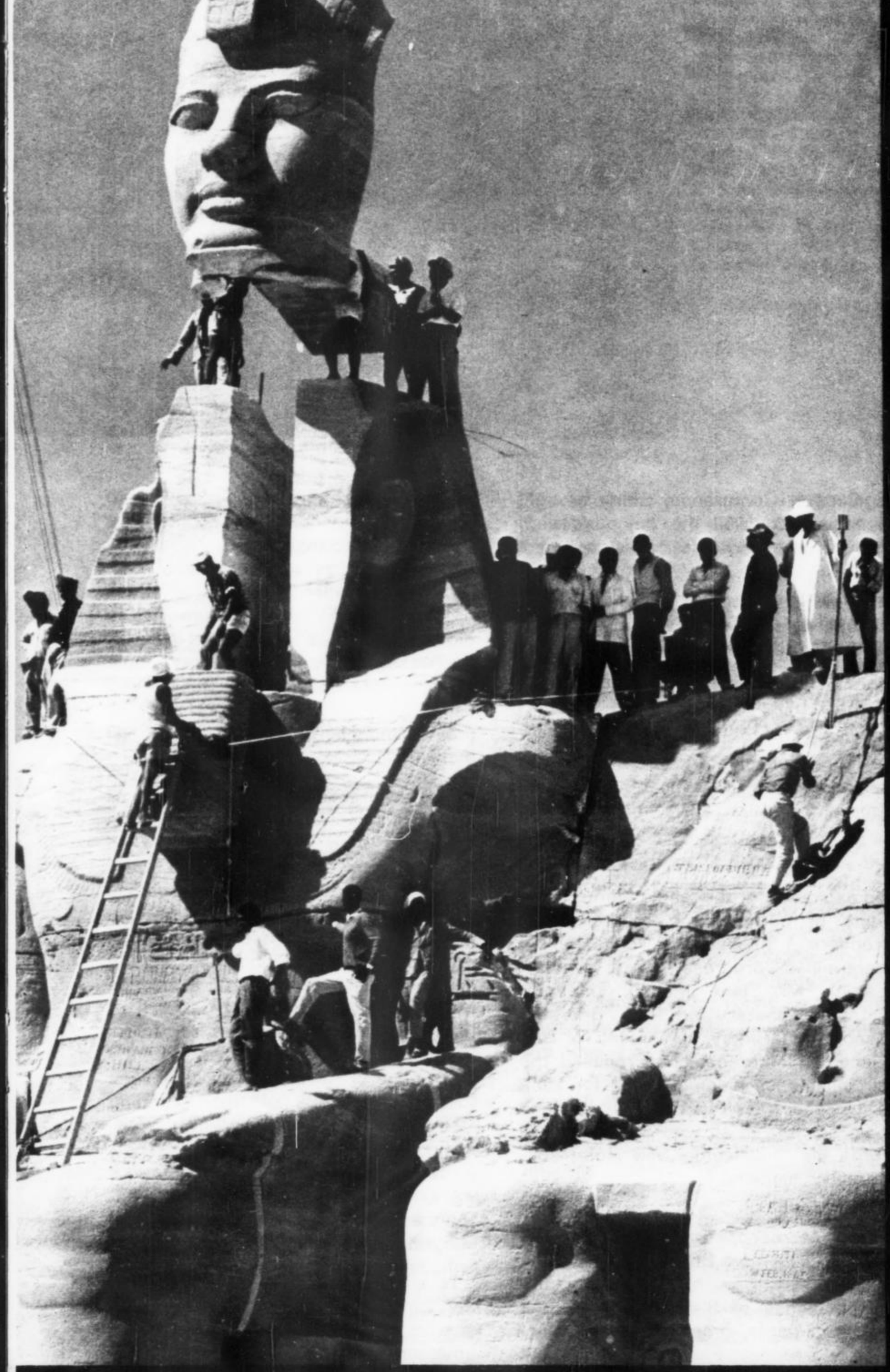
FACE-LIFT FOR RAMESES

1 Giant crane lowers one of the last blocks of stone from the colossi at Abu Simbel towards its place on the new site of the temple. This block (seen from rear), is the face of Rameses II cut away with an L-shaped section of stone to anchor it in place. Hooks for lifting are cemented into the block with a synthetic resin compound.

2 Rameses' face is swung round and manœuvred over gap between two halves of skull. Operation resembles a game with building blocks played on a monumental scale.

3 Immense stone face back in its 3,000 year-old place. Cut up with infinite precaution and lifted 64 metres (200 feet) up a hillside, the temples of Abu Simbel have risen again in all their ancient majesty. On their former site they would by now have been submerged by the waters of the Nile.

Photos © Günter R. Reitz, Hanover



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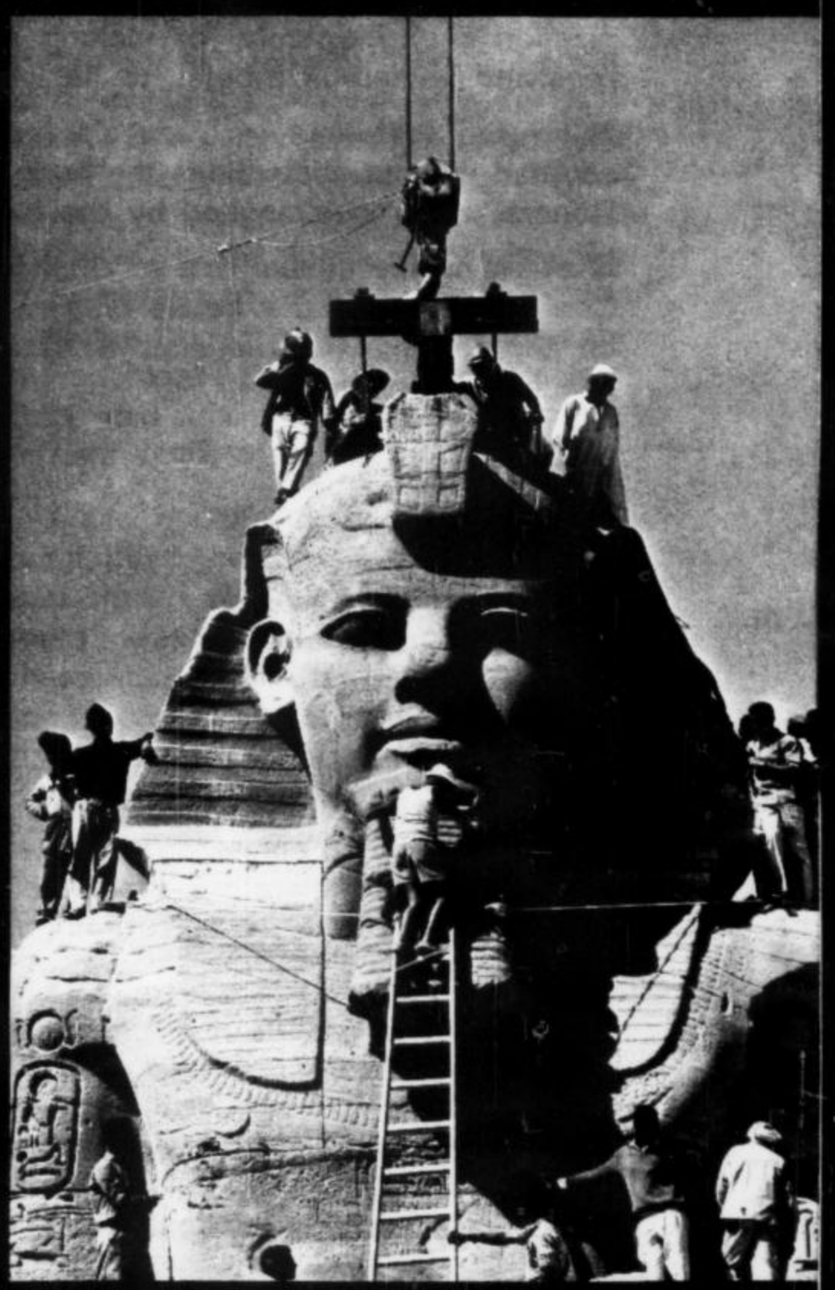

UNESCO IN THE SERVICE OF PEACE

by Vladimir de Lipski

THE 14th Session of the Unesco General Conference, which brought together in Paris from October 25 to November 30, 1966 the delegations of 120 members states, including 60 ministers, was a memorable occasion in the life of Unesco in more ways than one:

- the 20th anniversary of Unesco, coinciding with this session, gave the Organization an opportunity for making a frank and open "self-appraisal" and for receiving numerous tributes to its influence and prestige throughout the world;
- for the first time in Unesco's history the General Conference unanimously adopted without abstentions the budget of $61,506,140 proposed by the Director-General and recommended by the Executive Board for the 1967-68 programme;
- affirming the ethical role of Unesco, "the moral conscience of humanity", the Conference adopted a series of general resolutions stating its position squarely on three major international issues. colonialism and racialism, development, peace.

The 20th anniversary of Unesco

The Constitution of Unesco came into force on November 4, 1946, having been ratified by 20 states. The General Conference therefore dedicated November 4, 1966 to the celebration of this anniversary.

The opening session of the celebration was held in the presence of General de Gaulle, President of the French Republic, who paid tribute to the work accomplished by Unesco in the cause of human unity. "Intellectual progress," he declared, "is an unquestioned aspiration of the whole world; . . . in spite of barriers and regardless of frontiers, intellectual development determines progress as a whole." Earlier, Mr. René Maheu, Unesco's Director-General, and Prof. Bedrettin Tuncel of Turkey, president of the General Conference, had recalled the circumstances leading to the founding of Unesco, traced its development, and paid homage to all who are helping to forge the "intellectual and moral solidarity of mankind."

Later that day, Mr. Mohammed El Fasi (Morocco), chairman of the Unesco Executive Board, spoke of "the extraordinary growth of Unesco, tangible evidence of the progress of the world towards greater freedom, justice and respect for human dignity."

During this day of dedication to peace and concord, the Conference adopted by acclamation a Declaration of the Principles of International Cultural Co-operation, Article 1 of which proclaims that: "each culture has a dignity and value which must be respected and preserved; every people has the right and the duty to develop its culture; all cultures form part of the common heritage belonging to all mankind."

No fewer than 98 heads of state or heads of government sent congratulations and good wishes to Unesco on its 20th anniversary; greetings were also received from the various bodies and institutions of the United Nations family, and from 20 intergovernmental organizations. Meeting in plenary session, delegates heard messages from U Thant, Secretary-General of the United Nations, and from Mr. Abdul Rahman Pazhwak, President of the U.N. General Assembly. Miss Jeanne Chaton, chairman of the Standing Committee of International Non-governmental Organizations, which are permanently associated with Unesco's work, spoke on behalf of these organizations; 27 of these bodies had sent congratulatory telegrams.

Nearly every country commemorated the 20th anniversary of Unesco with special celebrations organized by governments, Unesco National Com-

Photo Unesco-Dominique Roger

November 4, 1966: Charles de Gaulle, President of the French Republic, pays tribute to Unesco's work during the 14th session of the General Conference when the Organization celebrated its twentieth anniversary. On the platform, from left: Bedrettin Tuncel, President of the General Conference, René Maheu, Director-General of Unesco, and Mohammed El Fasi, Chairman of the Executive Board.

missions, scientific and cultural institutions, schools and universities, and press, film and radio.

Unesco's programme for 1967-1968

This programme, which was adopted unanimously, shows both a concern for stability and continuity and also a keen awareness of certain new needs. Continuing priority is accorded to education and science. The budget directly relating to Unesco's programme has increased by only 7.9 per cent.

The General Conference devoted much time to discussing Unesco's future programmes and affirmed its intention to co-ordinate these programmes more closely, to plan them on a longer-term basis and include more activities designed to promote cultural and human values.

The Conference considered that Unesco "should seek more and more, through medium and long-term forward planning, to devise activities which go beyond the framework of particular programmes and budgets." In the field of culture it is proposed to make a long-term study aimed at "ensuring for all men an increasingly full enjoyment of their common cultural heritage and full participation in cultural activities."

Details of the various sections of the programme—education, natural sciences, human sciences and culture, communication— bear the imprint of a double aim: to maintain existing priority activities and to give place to new projects which can be further developed in the future.

In education, the established priorities relate to educational planning, integrated with the general planning of economic and social development; the pre-service and in-service training of teachers and improvement of teachers' status; functional literacy teaching; the use of new teaching methods, and in particular audio-visual methods; out-of-school education for young people and continuing education for adults; and the access of girls and women to education. More attention will also be paid to problems of educational guidance and access to higher education, the education of handicapped children and education for international understanding.

In the field of the natural sciences, the most important projects relate to the life sciences, the conservation of natural resources, and the application of science to development. In particular Unesco, in co-operation with the International Biological Programme, plans to draw up an inventory of the world's biological resources, taking into account needs resulting from the present population increase. It will continue the work undertaken since 1965 in connexion with the International Hydrological Decade, paying special attention to the problem of water pollution. It will also continue to promote and co-ordinate oceanographic research. In the future, Unesco will increase its aid to member states for the planning of national sciences policies, the development of science teaching and research, the training of scientists and the establishment of "the infrastructure of science."

While continuing its survey on the main trends of research in the social and human sciences, Unesco will pay more attention to the application of these sciences. Studies will be made, for instance, of the relation between the development of education and demographical evolution, as well as of social and cultural problems created by the implanting of science and technology in developing countries. As a follow-up to the East-West Major Project, now successfully completed, a programme of studies of different cultures—Oriental, African, Latin American, and others—will be carried out in terms of their universal significance. As for the preservation of mankind's cultural heritage, Unesco, while continuing its activities to save the monu-

CONTINUED ON PAGE 30

ments of Nubia, will encourage in particular the co-ordination of efforts to repair damage caused to the art treasures of Florence and Venice by the recent floods; and will promote tourism as a factor for economic development and the preservation of culture.

Lastly, as regards communication in the broadest sense of the term—dissemination of knowledge and the international flow of ideas through modern communication media—the marked increase of Unesco's activities will be particularly felt in documentation, through assistance to member states to improve their documentation services and the fostering of international co-operation. A book development programme will be launched for the developing countries; and Unesco's interest in the use of satellite communications for educational purposes will be demonstrated by studies for a pilot project covering a wide region.

On colonialism and racialism, development and peace

On the evening of November 28, 1966, the General Conference adopted three important resolutions—on colonialism and racialism, development, and peace. Unesco's Director-General, Mr. René Maheu, summed up the historic significance of this triple decision in these words:

"On the agenda of the General Conference were three main problems which set the keynote for the present session, and which are inter-linked: namely, colonialism and racialism, development, and peace. On the question of colonialism and racialism, you took stock of the world as it is, a world which is, alas! divided by frontiers separating men and nations, sometimes even groups within the same nation... Then you unanimously adopted a resolution of peace. This is the world as it should be, the world we dream of, the world for which we yearn... Between the world as it is and the world as it should be, the resolution on development, which you have just adopted unanimously, is of particular importance in that it foreshadows the world we are striving to create... It is for this reason that I regard is as the most substantial of the three, the test of our sincerity and our hopes."

In its resolution on colonialism and racialism, adopted by 72 votes to 11, with 26 abstentions, the General Conference condemns "all forms and manifestations of colonialism and neocolonialism" and declares its conviction that " the continued existence of colonialism and the practice of apartheid and all other forms of racial discrimination constitute a threat to international peace and a crime against humanity." The Conference instructs the Director-General "to provide the peoples concerned... with the necessary assistance for the development of education, science and culture and eradication of the after-effects of colonialism", and also to use Unesco's activities "to expose and to help to eradicate" all colonialist and racialist practices.

The same resolution asks the Director-General "to withhold assistance from the Governments of Portugal, the Republic of South Africa and the illegal regime of Southern Rhodesia... and not to invite them to attend conferences or take part in other Unesco activities."

Previously the Conference had rejected, by 60 votes to 38 and 4 abstentions, a request by the Portuguese Government that the International Court of Justice be asked for an advisory opinion on the validity of a decision by the Unesco Executive Board which would exclude Portugal from meetings convened by Unesco.

The resolution on peace, which was adopted by acclamation, appeals to all member states to "reject war once and for all as an instrument of their national policy and condemn all forms of direct or indirect aggression and of interference in the domestic affairs of States; renounce all recourse to violence in the settlement of their differences; respect the right of all nations to self-determination and independence and freedom to choose their political, economic, social and cultural system; take all necessary action to contribute to the agreement on general and complete disarmament under international control." It further invites the Director-General "to submit... a concrete plan of activity... to reinforce the contribution of the Organization to peace, international co-operation and security of peoples through education, science and culture."

This resolution marks the outcome of the "self-appraisal" which Unesco has made during the past year on its contribution to peace. For this purpose, member states were consulted by questionnaire; a first meeting of leading international figures was held at Bellagio in May; and a round table took place at Unesco from October 31 to November 4, 1966. Taking part in the round table were former presidents of Unesco's General Conference, former chairmen of the Executive Board, former Directors-General of Unesco and three Nobel Prize Winners (Lord Boyd Orr, the Honourable Philip Noel Baker, and Professor Linus Pauling). The General Conference resolution takes account of the results of these consultations and meetings.

Lastly, in the resolution on development—adopted by 68 votes to nil, with 14 abstentions—the General Conference notes that "despite the encouraging results achieved... the gap between the developed countries and the developing countries is still widening and creating greater social, political and economic tensions."

It therefore appeals to member states to intensify their efforts to attain the objectives of the Development Decade. It asks the Director-General to explore the possibilities of introducing more flexible methods and procedures in programmes which are related to the Decade; and to assist member states, at their request, to carry out projects relating to the integration of education in economic and social development, literacy teaching, the application of science and technology to development, establishment of the necessary conditions for the optimum development of man, cultural tourism, and improvement of mass communication media and of documentation and statistical services.

It should be made clear that already two-thirds of Unesco's total resources, both budgetary and extra-budgetary, are devoted to operational activities for development projects. By making Unesco's 20th anniversary celebrations a demonstration of world solidarity, by adopting unanimously the programme and budget for the next two years, and by defining vigorously and eloquently Unesco's role in the service of peace, development and human rights, the General Conference has demonstrated the authority, vitality and maturity with which Unesco is embarking on its future tasks.

Letters to the Editor

BETTER A HORNLESS RHINO...

Sir,

After reading the article on international co-operation in National Parks (Unesco Courier, February 1965), I suggest a way to help to ensure the survival of the one-horned (and other) rhinoceros would be to equip game wardens to anaesthetize the animals with darts and to saw off their horns (I do believe they would be no worse off!).

When an animal woke up it would no longer be attractive to poachers! The sawn-off horns might then be sold or given to those who would otherwise be poachers. The scheme might be expensive but still cheaper than having an army of game wardens ever at war with the poachers.

It is better to have, temporarily, a race of hornless "one-horn" rhino than *no* rhino. This is an emergency, so drastic measures must taken—we must ignore the aesthetic aspect of the horn to save the species!

Anthony Scott-Jupp
London, England

A MATHEMATICAL SLIP!

Sir,

May I draw your attention to an error—obviously a typographical one—in a caption with the article, by Nicole Picard on new approaches to mathematics teaching (page 27, June 1966). The caption began, "The Sumerians... over 3,000 years ago." You certainly meant 5,000 years ago, or 3,000 years before the Christian Era.

Our granddaughter in a Kibutz (Israeli agricultural co-operative) is successfully learning calculation by the new system of mathematics teaching.

I am always glad to receive the interesting and stimulating issues of the Unesco Courier.

Ludwig Börnstein
Tel Aviv, Israel

DISTORTED VIEW OF FARMING

Sir,

Geography books and textbooks of all kinds give children an image of the world which cannot fail to influence their outlook later in life. The effect might be compared to that of a badly-adjusted exposure meter; the photographer gets a picture, but a distorted one.

The example is apposite when applied to the problem of world hunger and what is to be done about it. Though frequently revised, textbooks in most European countries are still some sixty years behind the times. They present an entirely out-of-date image of farming and crafts, and even books used for higher studies hardly refer to factories and big industrial enterprises.

Not surprisingly, most Europeans, are ill-equipped to understand the world problem of hunger and what is being done to solve it. In many books, pictures of horse-drawn carts, teams of oxen and the threshing of grain with flails still figure as symbols of country life, which has long since lost this idyllic character. Far too few engineers, university graduates and technicians enter agriculture. This is partly because the utility of higher studies in farming and other rural professions is not realized, for the reasons already given.

World hunger will not be vanquished simply by delivering large stocks of grain to areas threatened by famine. Far more will be achieved through re-education that leads people to place a higher value on farming and to consider it on an equal footing with industry.

Anton Padua
Linz, Austria

IN EVERY SCHOOL...

Sir,

Regular reading of the Unesco Courier for over 12 years has broadened my horizons and kept me in touch with up-to-date developments in different branches of science.

As a high school teacher I show the magazine to my students. Much curiosity was kindled by the issue on Victory in Nubia (December 1964). Students expressed high appreciation for the mammoth work of saving the ancient monuments of culture in Egypt undertaken by Unesco.

I feel that every teacher and every student in every country should read the Unesco Courier. This would go a long way towards establishing international amity and peace on our planet. I would like to appeal to governments of all countries to request their schools to subscribe to the magazine.

Bapu Shirhatti,
F. M. Dabli High School
Shirhatti, India

MORE ACCENT ON YOUTH

Sir,

The Unesco Courier is a publication of great value, rich in knowledge and culture. If it were to make any adjustments in its reading content, I think it should be for younger people. There should be in every edition a special section devoted to the work and achievements of Unesco Clubs and youth enterprises throughout the world.

Since Unesco places such great emphasis on young people and the future of an orderly society in the world, based on understanding, friendship and co-operation it must not be found wanting in exploiting every means to give the necessary confidence and encouragement. Thus the Unesco Courier can be of greater importance in playing a major role, by its nature, scope and influence in the battle against prejudice, disharmony and indifference which is so widespread in the world today. I think a youth section would also boost sales.

We have a local Unesco Group (aged 16 to 21) in Milltown, which would be glad to hear from other Unesco "fans" in any part of the world.

Michael O'Sullivan
Knockavota, Milltown, Co. Kerry
Republic of Ireland

SUN WATCHERS IN THE PYRENEES

Sir,

Having subscribed to the Unesco Courier for several years, I find the variety of articles you publish informative and well written.

But in the article on the International Years of the Quiet Sun (Sept. 1966) I feel that mention should have been made of the specialized service at the Pic du Midi Observatory in the Pyrenees. Solar observers there note the activity of sun spots and give warnings of possible fading or other interference with radio waves in the upper atmosphere, which are of the greatest value to navigators in the air and on the ground. The service is thus one of first-rate international importance.

Dr. P. R. Germain
Mios, Gironde, France

CANADIAN PEACE RESEARCH AND EDUCATION

Sir,

Your readers may wish to know that the Canadian Peace Research and Education Association, which was formed in June 1966, invites members of the academic community who are interested in peace research and peace education to apply for membership. Applications (fee $12.00; $5.00 for students) should be sent to Professor Fred Knelman, 91 St. George Street, University of Toronto, Toronto 5, Ontario, Canada.

June E. Cook
Toronto, Canada

From the Unesco Newsroom...

Audio-visual secondary school for France

An experimental secondary school specially designed for the use of closed-circuit television, language laboratories, film strips, slides and other audio-visual techniques has been built at Marly-le-Roi, near Paris. Teachers have been given special educational and technical training for a programme divided into three phases: information, assimilation and exploitation.

U.S. cities eager to house Egyptian temple

More than a score of U.S. cities, among them Memphis, Tennessee, and Cairo, Illinois, are competing for the honour of providing a home for the 2,000-year-old Egyptian Temple of Dendur. The temple was offered as a gift to the U.S.A. by the United Arab Republic in recognition of American contributions of $16 million to help save the temples of Abu Simbel (see page 25). Built during the reign of the Roman Emperor Augustus, the 41-feet-long temple consists of two rooms and an antechamber whose walls are covered with classical Egyptian carvings.

Exploring the world's deepest sea floor canyon

The world's deepest and longest submarine canyon (15,000 feet deep and more than 200 miles long), beginning off Florida and slicing through the Bahamas, has been discovered by a U.S. scientist Dr. Robert J. Hurley. Dr. Hurley is now charting the Grand Bahama Canyon with precision depth recorders, with seismic reflectors and with deep-sea cameras. He has already discovered immense concentrations of manganese nodules covering the ocean floor like cobblestones.

Improving technical education in Asia

A Unesco-sponsored seminar on technical education in Asia recently provided a forum for discussion and exchange of ideas in Bombay, India. Organized jointly by Unesco's South Asia Science Co-operation Office in New Delhi and the Indian Ministry of Education, it brought together senior members of technical education institutes and allied fields from 13 Asian countries. Among the topics dicussed were education and the training of craftsmen and technicians, and engineering education.

National surveys measure public opinion of Unesco

Public opinion surveys to measure the average citizen's knowledge of and attitude towards Unesco are being carried out in several countries. Results of a survey covering 3,000 persons in over 200 towns and villages throughout Japan showed that 61.7 per cent of those interviewed "had heard" of Unesco and of these more than half correctly indentified Unesco's major objective as the promotion of collaboration among nations through education, science and culture. Among those with knowledge of Unesco's activities 71.7 per cent considered that Unesco's work had proved substantially effective for the promotion of collaboration among nations.

Unesco to study Chad Basin's water resources

A study of water resources in the Chad Basin—one of Africa's least developed areas—is to be carried out by Unesco under the United Nations Development Programme. Plans to increase returns from agriculture, cattle-raising and fishing in the region will be based on the results of the study. For this 18-months project, the U.N. Development Programme will contribute $ 347,000 and participating countries—the Chad, Nigeria, Cameroon and Niger—over $ 130,000. The project will be an occasion for specialists from these countries to undergo further training in hydrology, cartography, the interpretation of aerial photographs and topography.

World's forests shrink under axe and power saw

An estimated 1,200 million cubic metres of wood were removed from the forests of the world in 1947. By 1963 the annual wood harvest had passed 1,900 million cubic metres, and is expected to exceed the 2,200 million cubic metre mark within the next ten years, reports the U.N. Food and Agriculture Organization. FAO estimates that in Europe alone the demand for pulp, newsprint and paper products will be four times greater in 1980 than it is today.

Flashes...

■ *A slight improvement in world food supplies can be expected in 1966-67 as compared to 1965-66, when the worst setback since the Second World War was experienced, reports FAO.*

■ *Italy and Australia have become the 33rd and 34th countries to ratify the convention against discrimination in education, adopted by the Unesco General Conference in 1960.*

■ *Dental disease in European children has reached major proportions, reports WHO, whose surveys in Austria, Bulgaria, Czechoslovakia, France, Greece and the Netherlands show that 70% to 90% of children suffer from dental caries.*

■ *Air pollution now costs the U.S.A. several thousand million dollars a year, reports that country's Air Pollution Control Association.*

■ *Cities in the Eastern Mediterranean are growing an average of 4 % per year compared to the region's overall population growth of 2.4%, according to WHO.*

More secondary schools for Ethiopia

Ethiopia plans to increase its secondary school places by 65 per cent before 1970 under an $ 11 million school building programme planned with Unesco assistance. At present only one percent of Ethiopian children between the ages of 13 and 18 attend secondary schools. School programmes will be revised, by including such practical subjects as agriculture, industrial arts, commerce and domestic science.

Serving their country by serving others

Young conscripts in France can serve their country by using their technical skills or teaching ability to help another country. This revolutionary concept of "national service" means that qualified young men fresh from university or training colleges can, after two weeks basic military training, go overseas to work for the rest of their service as engineers, economists, teachers or architects in developing countries where their expertise is most needed. Since the scheme started in 1963 more than 14,000 young Frenchmen have served in this way in Asia, Africa and Latin America.

Eating noises fool hungry fish

Sounds made by fish when they are feeding can be used to lure shoals of the same kind of fish into a net. Japanese scientists reporting this to an international symposium on marine bio-acoustics in New York, claimed that they had succeeded in luring carp and certain kinds of sea fish by playing back recordings of their own species' feeding sounds through underwater acoustical equipment.

Museum for the blind

A gallery designed so that the blind can "see" works of art through their sense of touch has been opened at the North Carolina Museum of Art. At the entrance, the blind visitor finds instructions in Braille and a relief map of the gallery. Exhibits are laid out on a counter and are usually small enough to be picked up and handled. They include Stone Age carvings and sculptures from many ages and civilizations.

Helping the blind in Africa

There are more than 1,400,000 blind people in tropical and equatorial Africa, including 100,000 children. Today only one blind child in fifty is able to attend school and only one adult in a thousand can

be rehabilitated and given vocational training. At a recent conference in Lagos (Nigeria), a programme was drawn up to rehabilitate and find work for at least 3,000 blind people in rural areas. At least one vocational training centre for the blind will be set up in each country.

Primary education in Latin America

Latin America now has over a million primary school teachers—400,000 more than in 1957. In the last seven years, the number of teachers in technical colleges has risen from 1,100 to 3,000. All teachers in Venezuela are now graduates. Within three years, the same will be true of Nicaragua. In Peru, 8,000 teachers have taken accelerated training courses during the holidays. All Latin American countries now offer correspondence or radio courses to help teachers who need to complete their training.

Shipbuilding by computer

Computers will henceforward make it possible to build perfect ships. The requirements of the company ordering the vessel—type of ship, operating costs, kind of cargo carried, insurance and crew costs—will be fed into a computer. In a few hours, the computer will provide sufficient data to guide construction and also determine the cost. If the tonnage and speed are not those anticipated, then the ship-owner has miscalculated. A computer of this kind is to be set up in the shipbuilding yards at Newcastle in Great Britain.

Air traffic in the Caribbean

Representatives of 19 countries and nine international organizations have been examining the new transport needs of the Caribbean—one of the eight regions for which the International Civil Aviation Organization has prepared detailed plans for new air navigation installations. The conference studied the planning of airports, air communications (which are still inadequate), the development of weather forecasting systems, air traffic control and the improvement of pre-flight and in-flight information services.

Teaching good food habits in India

As a contribution to the Freedom-From-Hunger Campaign, the United Kingdom Save-the-Children Fund has donated 10 vans to India equipped with teaching material and carrying teams of nutritionists. The mobile units will teach village people how to make the most of locally available nutritious foods. Funds collected in the Netherlands under the Unesco Gift Coupon Programme have also provided India with another of these mobile schools. Four of the vans are already in operation.

Natural history on loan

The Passmore Edwards Museum in London has recently introduced a novel loan service. Schoolchildren may now borrow living hedgehogs, toads, mice, guinea-pigs, rabbits, tortoises, fish and other animals. Care is taken to see that the temporary guests are returned safe and sound. The children's book-knowledge of natural history will be greatly enriched by this new aid to "learning from life".

New schools for the Ivory Coast

The Ivory Coast Government is to build 13 new secondary schools and will open 500 new primary classes. It is also planning to improve the quality of schooling through a large-scale revision of the educational system. Primary school teachers will have to hold at least an elementary certificate and all young teachers will have to complete teacher-training courses before being given a post. The Ministry of Education is also drawing up refresher courses for all teachers.

New solar observatory in Australia

Two scientists of the Australian Commonwealth Scientific and Industrial Research Organization have designed some remarkable equipment for a new solar observatory at Culgoora, 350 kilometres (220 miles) from Sydney, Australia. Every 15 seconds, precise images of the sun's surface are produced by an electronically-controlled optical telescope while a radio heliograph provides almost instantaneous two-dimensional images of the radio-wave emissions accompanying solar eruptions. This unique apparatus has the sensitivity and accuracy of a huge aerial nearly two miles in diameter. By detecting clouds of plasma which are formed during certain solar emissions, it also helps to give warning of radiation that would be harmful to astronauts.

False teeth for sheep

Dental surgery for sheep—including the fitting of false teeth—has been developed in Great Britain during agricultural research. Loss of teeth and the consequent inability to masticate results in premature slaughtering of sheep, but the reproductive life of animals now slaughtered at 3 or 4 years of age will be increased to 9 or 10 thanks to dental plates.

The measure of illiteracy

There are 25 % more illiterate women than men in the world. Statistics for the developing countries reveal that 87 % of African women are illiterate against 69 % of African men; the figures for Asia and Oceania are 61 % and 41 % respectively and for the Arab countries 88 % and 65 %.

Education in the Arab countries

In the Arab countries, whose total population rose from 92 million in 1960 to 105 million in 1965, there were 6,300,000 primary pupils in 1959-60 and 9,700,000 in 1964-65—an average annual increase of 9 %. Enrolments in secondary schools rose from 1,124,000 in 1959-60 to 1,941,000 in 1964-65. The number of students attending higher educational institutions increased from 145,000 in 1959-60 to 241,000 in 1963-64, not including enrolment in private schools or foreign universities.

BOOKSHELF

UNESCO BOOKS

■ **Educational Planning and Development in Uganda**

(African Research Monographs 1). By J.D. Chesswas.

Unesco-International Institute of Educational Planning, 1966 ($2.00, 10/- stg., 7 F).

■ **Source Book for Science Teaching**

Revised and enlarged edition of Unesco's best seller "do it youself" science book ($3.00, 15/- stg., 10.50 F).

■ **World Directory of National Science Policy-Making Bodies**

Vol. I: Europe and North America. Texts in English or French according to language used by each country in correspondence with Unesco.

Co-edition: Unesco-Francis Hodgson Ltd., 1966 ($11.00, 55/- stg., 38 F).

EDUCATIONAL PLANNING

■ **A Directory of Training and Research Institutions**

■ **An Inventory of Major Research Needs**

■ **A Bibliography**

All these volumes on educational planning are published by the International Institute for Educational Planning, 7, rue Eugène-Delacroix, Paris-16. (Per volume: $2.00, 10/- stg., 9 F).

■ **Problems and Strategies of Educational Planning**

(Lessons from Latin America).

Unesco-International Institute for Educational Planning, 1965 ($3.00, 15/- stg., 10.50 F).

★

■ **Family Planning and Population Programs.**

A review of world developments. Edited by Bernard Berelson, Richmond K. Anderson, Oscar Harkavy, John Maier, W. Parker Mauldin, Sheldon J. Segal. The University of Chicago Press, Chicago and London, 1966 ($12.50, 90/- stg.).

■ **Marriage in the Modern World**

By Bernard Häring.

The Mercier Press, Cork, Republic of Ireland, 1966 (35/-).

■ **Latin America**

By Harold Blakemore. The Modern World Series, Oxford University Press, 1966 (7/6 stg.).

■ **Agikuyu Folk Tales**

By Ngumbu Njururi (from the heritage of the Agikuyu people, Kenya). Oxford University Press, 1966 (13/6 stg., in U.K. only).

A LOOK AT WORLD POPULATION THE DAY AFTER TOMORROW

(Continued from page 13)

Today, with the techniques now available (not necessarily used), two hectares can feed better than in the past, not one man but ten to 20. Tomorrow it will be 30 or 40. This would permit population densities per hectare of close to those of present-day London or Berlin.

The brutal though effective mechanism of food supply, which once limited the proliferation of the human species as it does all animal species, no longer operates. The problem is to discover if another will take its place.

Man needs, occupies and uses space —that is, geographical places on the surface of the earth. These are necessary to satisfy four types of needs: the need for agricultural produce necessary for nourishment; the need for manufactured products; the need for shelter; and the need for movement (exercise, walking, sports, tourism). Let us call these four "quantities of space" needed by the average man h_1, h_2, h_3, and h_4, respectively. h_1 and h_2 are relatively easy to measure accurately; h_3 is tricky to measure; and h_4 is almost impossible to calculate.

But the important fact, which is easily observed if we compare modern life with traditional life, is that progress in production techniques and the resulting improvement in our way of life and living standards are constantly reducing h_1 and, on the contrary, increasing h_3 and h_4. It looks as though h_2 is destined to reach a certain level at which it will remain stable.

AS already indicated, for the average man in the 18th century, h_1 was about two hectares (five acres) of good ground in a land with a temperate climate; h_2 was very small since there were few industrial plants, factories and artisans' workshops at that time; with four or five people often crowded into a room 16 metres (19 yards) square, h_3 was also small for the average man (but for the wealthy with their chateaux, parks and gardens it was considerable—often from one to two hectares); finally, h_4 was also small as a *need* since low living standards and mediocre techniques deprived the average man of means of transport and the desire to travel, but its *potential* was immense in a world still almost empty of men.

Thus it was the value of h_1 that limited total population until the dawn of the industrial revolution. But modern progress is steadily reducing h_1. It has already shrunk to about one-third of an hectare (and in the view of some competent agronomists even as low as one-tenth); by 2100 or 2200 A.D. it will certainly be much smaller still. And while it may continue to impose harsh restraints on certain nations over the next 50 to 80 years, it will probably no longer be the factor that determines population levels in the future.

SINCE one hectare is equivalent to 10,000 square metres and on the basis of present trends, it seems likely that h_1 will still be the largest of the three space quantities—h_1, h_2 and h_3— as the year 2100 approaches. But by then the total of all three may well have been reduced to less than 1,000 square metres, which would allow a population density of ten to the hectare.

There remains the term h_4. Since it is far more qualitative than quantitative, we can only attempt to define it by having recourse to recollections of our own travels, to emotions stirred by discoveries made over the face of the globe and to the prestige enjoyed by explorers, pioneers and Alpinists. For our descendants it is possible that the hope of reaching an uninhabited place will be merely something they read about in books.

Assiduous calculators may well compute the number of people who would be jostling each other on the 100 kilometres (60 miles) of beaches along the French Cote d'Azur if each of the 550 million Frenchmen were allowed to spend from two to four weeks there even once in his lifetime. They could also estimate how many metres of beaches with Mediterranean-type or tropical climates there are for each Russian, each Chinese and each Indian today, and even how many kilometres of artificial beaches would have to be built to allow each person to spend two weeks paid holiday there. Many serious-minded persons would frown on this sort of calculation.

But I would say its merit is to demonstrate the differences which will exist between the civilization of yesterday, that of today and that of tomorrow which we are already beginning to create.

Our modern civilization is orientated toward an increase in consumer goods and toward a reduction in living space. The rich man of the 18th century had only a horse-drawn carriage, a few mirrors, hardly any books and no refrigerator. The average man of tomorrow will be rich, far richer than was the rich man of yesterday in food products and manufactured goods. He will be gorged with vitamins, oranges and pineapples, aeroplanes, electric razors, and even classical music.

BUT the rich contemporary of Voltaire had a large house set in spacious grounds—an island of civilization surrounded by an almost virgin Nature. This fact allows us to indulge in some speculation on what life in Western Europe would be like today, if the advance in living standards since the 18th century could have been accomplished with a static population.

Despite his almost incalculable primary and secondary riches, our wealthy grandson will neither be able to live in nor build for himself dwelling places comparable to an 18th century mansion—simply for lack of space. To become acquainted with their charm and civilizing qualities, he will be obliged to buy his ticket and join the nostalgic and interminable throng which in France has already been filing over the past 15 to 30 years through the stately homes at Vaux-le-Vicomte, Champs, Anet, Malmaison, Dampierre, Courance, Ormesson, Chamarandes...

Jean FOURASTIE

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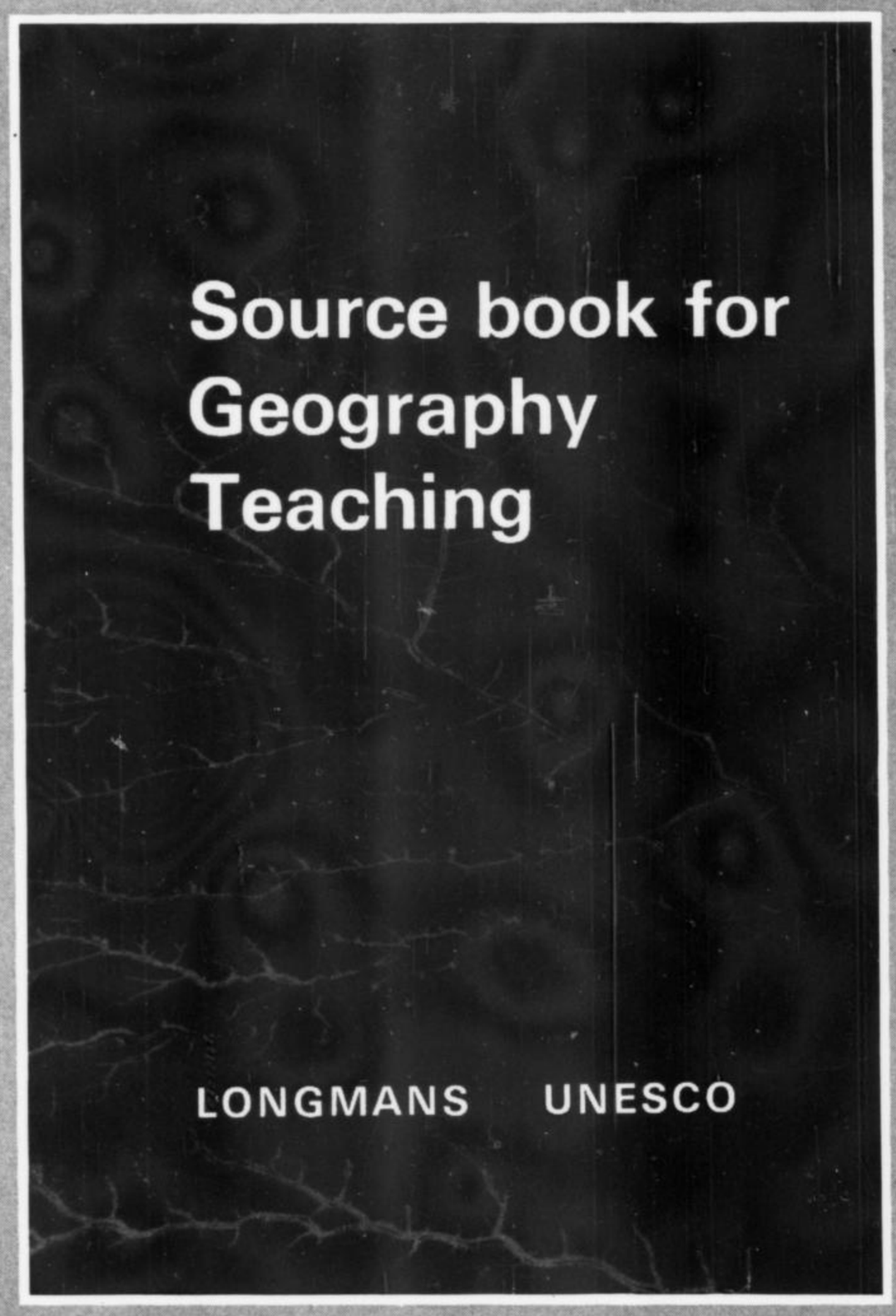
GUIDE-BOOK FOR THE GEOGRAPHY TEACHER

Here is what the *Journal of Geography,* official organ of the National Council for Geography Education, says about Source Book for Geography Teaching:



SOURCE BOOK FOR
GEOGRAPHY TEACHING
A Longmans Green, London - Unesco
co-edition. 254 pages. Illustrated. $4.50

This small volume, covering suggestions for source materials on the teaching of geography, is the product of seven authors who submitted their materials to some 450 teachers of the subject throughout the world. The exposure of the experimental material brought vast numbers of comments and one might expect the result would be overwhelming. The authors, however, have incorporated the materials and ideas into a comprehensive text.

If prospective teachers are confused as to the nature of geography or its definition as a tool subject the second chapter provides four working interpretations with examples of type studies from world geography. The American geography teacher would probably meld all interpretations together. This second chapter provides the fundamental core of the text.

The subsequent chapters describe a vast number of techniques, including various levels of field work and observation as well as the tools of the geographer. Where equipment and supply levels are minimum in some parts of the world, even in rural America, the suggested list could serve as a guide for preparing Title III proposals. Many teachers would find comments on projectors, duplicators, chalk-boards, etc., unnecessary in a book on the teaching of geography unless they consider it was written for many teachers all over the world. On the other hand, the systematic definition of the function of wall maps is an example of comprehensive evaluation.

There is a chapter on the physical features and equipment in an ideal geography room including directions for the construction of map.

Although it may be impractical, this writer was much impressed by the list of bibliographies and periodicals, many of which might not even be found in a college library. The bibliography is prepared for all countries of the world. A list of film agencies in all continents is included.

Although much material of the text may not be applicable to every teacher of geography, the refreshing abundance and thoroughness of this small volume can not but be appreciated.

— Benjamin Moulton
Indiana State College
Terre Haute, Ind.

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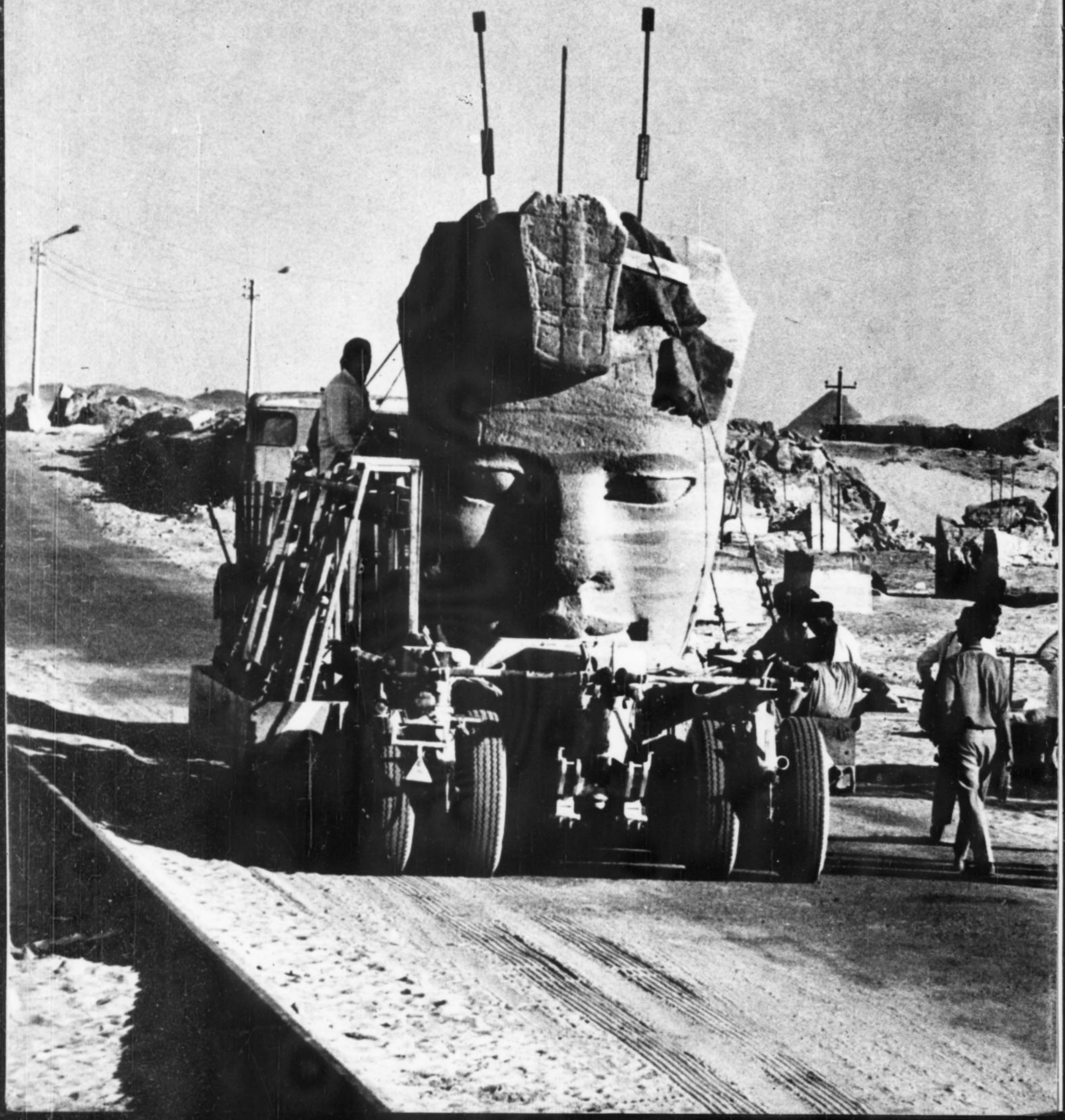
A ROLLING STONE NAMED RAMESES

(See page 25)

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